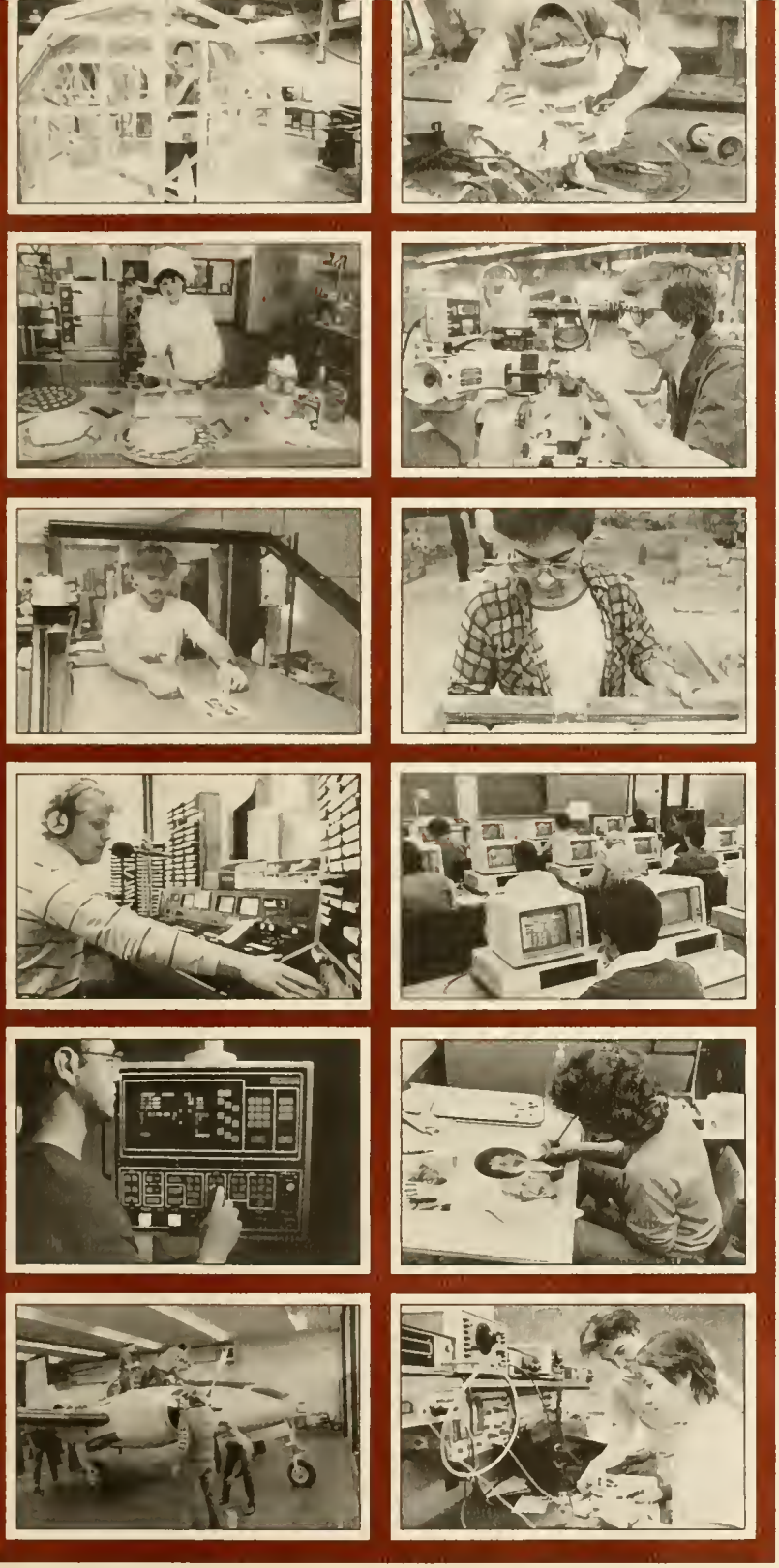

Catalog 1986-87

The Williamsport Area Community College

The Williamsport Area Community College is a two-year coeducational, publicly-supported institution serving Northcentral Pennsylvania and is a fully-accredited member of Middle States Association of Colleges and Secondary Schools.

OK, but redo

BOARD OF TRUSTEES

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CATALOG 1986-87

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ABOUT THE COLLEGE

History

1914—A small industrial arts shop opened at the Williamsport High School.
1920—A full-time adult day school and an evening school were established.
1941—The Williamsport Technical Institute was formed, encompassing both the adult and high school programs.
1965—The Williamsport Area Community College was established by expanding the programming of the Williamsport Technical Institute to include a larger range of community needs.
1981—The College dedicated three new buildings constructed under Stage I of the building improvement program.
1984—The College dedicated the new Lifelong Education Center.
1985—The College broke ground for the new Advanced Technology and Health Sciences Center.

Today

The Williamsport Area Community College serves over 20,000 people a year through a diverse range of programs and courses. The College offers:

*Fifty-eight programs leading to associate degrees or certificates in vocational and technical fields and in the liberal arts and sciences.

*Vocational training for secondary students.

*Courses tailored to meet the needs of business and industry for employee training.

*A broad range of avocational courses offered both on-campus and at off-campus sites.

Backed by a tradition of excellence in technical education, the College has gained a national reputation for the diversity and quality of its occupational programs. Of the more than 4000 students a year enrolled in associate degree and certificate programs, about 92 percent are in a technical or occupational area.

The College's programs are housed on five campuses: the central campus in Williamsport, the Earth Science Center in Allenwood/Montgomery, the Aviation Center, adjacent to the Lycoming County Airport in Montoursville, the Danville State Farm Laboratory, and the North Campus, located near Wellsboro. Courses are also offered at locations throughout the College's service area.

In 1985, the College broke ground for the new Advanced Technology and Health Sciences Center. This building will expand our ability to provide training in a "new generation" of technology—including fiber optics, automated manufacturing, robotics and laser technology. Our progress—in programming and campus development—reflects our commitment to meeting the emerging needs of our students and the region we serve.

The provisions of this catalog are not to be considered an irrevocable contract between the student and the College. The Williamsport Area Community College reserves the right to change any fees, requirements and regulations at any time within the student's term of enrollment at the College.

Students are responsible for meeting in full the requirements for graduation set forth by the College. The student's advisor assists in the planning of a program, but the final responsibility for meeting the requirements for graduation rests with the student.

The Williamsport Area Community College does not discriminate on the basis of age, sex, handicap, race, religion, creed, national origin, veteran status or political affiliation. Student inquiries concerning Title VI, IX and Section 504 compliance should be directed to the Title VI, IX and Section 504 Coordinator, Lawrence W. Emery, Jr., Room 157-F, LRC, The Williamsport Area Community College, 1005 West Third Street, Williamsport, PA 17701-5799, (717) 327-4765, or to the Director of the Office of Civil Rights, Department of Education, Office of Civil Rights, Washington, D.C. 20201.

PRESIDENT'S MESSAGE

The challenges of the future will be met by men and women with the resources to adapt to new ideas—and by communities which support the need for innovation in technology and in education.

The Williamsport Area Community College is committed to securing the future for our students and our community. In 1986-87, the College makes firm this commitment by offering a series of new advanced technology career training opportunities—many of which are unique to our region. And, we will open a new multi-million dollar Advanced Technology and Health Sciences Center—a facility already hailed by experts as "the most sophisticated of its type in the nation".

This year will be a year of discovery at The Williamsport Area Community College, as we enter into new program areas and develop new ways of serving our students. As you review the programs and services described in our 1986-87 catalog, you too will make a great discovery. You'll discover many differences . . . the difference between a textbook education and a quality hands-on learning experience . . . the difference between memorizing a classroom theory and gaining a real, marketable skill . . . and the difference a Williamsport Area Community College education could make in your future.

We invite you to discover the difference.

Robert L. Breuder
President

ADMISSION

Admission Policy

At The Williamsport Area Community College we are committed to serving the educational needs of students from all walks of life. The College operates under an "open-door" admissions policy and is open to anyone with a high school diploma or its equivalent. Anyone age 18 or older who does not have a high school diploma or the equivalent may be admitted as a "special student."

Acceptance to several programs of study is based upon the applicant's meeting the requirements (including necessary academic skills and prerequisites) of the specific program of study. The College reserves the right to deny admission or readmission to any student if, in the opinion of College authorities, his/her admission is not in the best interest of the student or the College.

The Williamsport Area Community College offers equal opportunity for admission without regard to age, race, color, creed, sex, national origin, handicap, veteran status, or political affiliation.

The College will provide opportunities to develop the basic skills necessary to enroll in associate degree and certificate courses to those who demonstrate such needs on the College's placement tests.

Acceptance

The Williamsport Area Community College will accept students based on the date the applicant's file (i.e., application for admission, application fee, transcripts/GED, and, when appropriate, testing material) is completed in the Admissions Office.

Admission Procedure

All graduates of accredited secondary schools in the Commonwealth of Pennsylvania are eligible for admission to the College as regular students. Admission into a specific program is based upon evidence of scholastic readiness for the program.

1. Application and Application Fee

   All applicants to degree and certificate programs must submit an "Application for Admission" form together with a non-refundable application fee. This fee is charged only once. The Director of Admissions, upon written request from a counselor, state agency, etc. has the authority to waive the fee when it can be determined that the fee causes financial hardship to an individual.

2. High School Graduation

   a. *High school students* must submit a partial transcript during their senior year. However, a final transcript of high school credits or proof of graduation from an approved or accredited high school with a four-year course of study must be on file before a student can attend classes.

   b. *High school graduates* must submit a final transcript of high school credits or proof of graduation from an approved or accredited high school with a four-year course of study.

   c. *Applicants age 18 or older* may be admitted to the College on the basis of an equivalency diploma, provided that the applicant has earned a minimum General Equivalency Diploma (GED) test score average of 45. Under special circumstances, applicants *17 years of age* may be considered for admission with a minimum GED test score average of 45.

   d. *Anyone age 18 or older* who has not met the requirements of sections a., b., or c. above may be considered for admission into a program as a "special student" provided he/she has the appropriate aptitudes and abilities to enter the College.

   e. *Early Admissions:* Applicants who have completed the eleventh grade at an approved or accredited high school may be considered for admission as a full-time or part-time student

during the senior year of high school provided: 1.) The chief administrative officer of the high school must submit a letter indicating approval of the student's early admission to the Admissions Office. That written approval, plus the applicant's application fee and transcript, must be provided to the Admissions Office before consideration shall be given the application. 2.) If denied admission as an early admissions student, the applicant shall be automatically considered for admission at the end of his/her senior year. 3.) All fees will be the responsibility of the student.

f. *Accelerated Program:* A high school student having completed two years of high school beyond grade nine may enroll in the accelerated program at The Williamsport Area Community College in lieu of the senior year of high school. The program begins in the fall semester. When the student completes 30 or more semester hours with a 2.00 ("C") grade point average or above, a high school diploma would be awarded by the appropriate school district.

Students entering the Associate of Arts programs must have a 3.50 high school grade point average (GPA). For entrance into the Associate of Applied Science, Associate of Applied Arts, or Certificate programs, students must have a minimum of a 2.50 GPA with a minimum of two semesters with a GPA of 3.00 in anticipated major or related areas.

To be accepted, in addition to the normal admission requirements students must have: 1.) A recommendation from his/her high school guidance counselor. 2.) Approval of his/her high school principal. 3.) A signed permission form from parents/legal guardians. 4.) Student/parent interview with the College's Director of Admissions.

The application fee will be waived by the College. Tuition and related fees will be paid by the school district. ALL MATERIALS WILL BE COORDINATED THROUGH THE COLLEGE'S SECONDARY VOCATIONAL OFFICE.

g. *Dual Enrollment:* Qualified full-time high school students may enroll part-time in College credit classes. College courses taken can be counted toward high school graduation with the school's approval. Students must be in the tenth, eleventh or twelfth grade and have a 2.50 minimum high school GPA to be eligible.

The same admission requirements, payment of fees and processing of the application procedures outlined in the accelerated program apply here.

h. *Credit in Escrow:* High school students who have completed two years beyond the ninth grade with a GPA of 2.50 may enroll part-time at The Williamsport Area Community College. They can take up to 11 credit hours, as determined by the Admissions Office, based upon the student's ability and required high school time. The same admission requirements, payment of fees and processing of the application procedures outlined in the accelerated program apply here.

3. Placement Examinations

To insure that applicants have the entry-level skills needed for their programs, all students are required to take the College's placement examinations. The College uses these examinations to assess applicants' skills in math, English and reading. Based on the results of their tests, students will be placed in the appropriate math, English and reading courses. The College reserves the right to recommend another program or require developmental courses if the test results indicate that an applicant does not have the required academic entry skills. Applicants who have demonstrated academic proficiency through either previous college course work or College Boards (SAT or ACT) may be exempt from testing.

4. Health Records Requirement

A student who may need special accommodations due to a physical or mental disability/handicap must submit his/her medical history on a health record card. (Health record cards are available from the College's Admissions Office.) The health card should be submitted well in advance of the term in which the student plans to enroll to allow the College to prepare for any special needs. The card must be received before the student can begin classes. A disability or handicap will not be used to deny a person admission to the College.

5. Tuition Deposit and Tuition Payment

All full-time applicants who have been accepted as degree-seeking or certificate-seeking students must submit a $100 tuition deposit. The tuition deposit will be credited to the student's tuition for the first semester. If the student does not enroll and notifies the College by July 1 for the fall semester and December 1 for the spring semester, the College will refund 80 percent of the tuition deposit.

The tuition deposit will hold a space in class until the announced deadline. Students who have not met their total financial obligations for the semester by the deadline will forfeit their class space. As a result, someone from the College's waiting list may take their space in the program.

6. Additional Requirements for Certain Programs

In addition to the College's general admission policies, applicants to certain programs shall complete other requirements prior to qualifying for acceptance. These programs are: Dental Hygiene, Dental Assisting, Occupational Therapy Assistant, Surgical Technology, Practical Nursing, Radiography and Automated Manufacturing Technology. These programs require:

a. Applicant must have graduated from an accredited secondary school or have successfully completed his/her General Equivalency Diploma (GED).

b. Applicant must successfully complete the College's placement tests.

c. Applicants to all the above programs except Automated Manufacturing Technology must be interviewed by designated program personnel.

d. Applicants to the Radiography program are required to have a hospital observation.

e. Applicants to Practical Nursing, Radiography, Surgical Technology, Occupational Therapy Assistant and Dental Hygiene are required to have additional standardized tests beyond the College's placement tests.

f. Applicants to Automated Manufacturing Technology must have the competencies of the first semester Machinist courses.

Admission of International Students

The Williamsport Area Community College believes that the presence of international students on campus will enrich the educational environment for all students. The College is authorized under federal law to enroll non-immigrant alien students on "F-I" student visas. An "Application for Admission" and all supporting documents must be received in the Admissions Office at least two weeks prior to the day of late registration for the term in which the student plans to enroll.

All transcripts, test scores, and other credentials become the property of the College and will not be returned or transferred to another institution.

In addition to the College's general admission requirements, international students must fulfill the following requirements:

1. All international students whose native language is not English are required to take the Test of English as a Foreign Language (TOEFL).
2. Applicants must submit an affidavit of support for themselves and for all members of their family who will accompany them to Williamsport. The affidavit certifies that the applicant has adequate funds to attend college and will not become a public charge. Failure to provide this information may result in the denial of the applicant's application for an "F-I" student visa.
3. All international students who are accepted must take the College's placement tests. Placement into the appropriate level of courses will be determined by the tests. International students must arrange to be on campus approximately one week prior to registration for the term in which they are enrolling. Failure to complete placement tests may result in denial of acceptance into programs.
4. International students must become familiar with the regulations of the Immigration and Naturalization Service and assume responsibility for complying with test regulations.

Reenrollment

Former students who wish to reenroll must apply for readmission through the Admissions Office. They do not need to submit an application fee. They may be required to submit a health records card. (See Health Records Requirement on page 3.)

1. A student who:

   a. reenrolls in the same program in which he/she was last enrolled, and
   b. reenrolls less than two years after he/she last attended the College,

   may be required to meet graduation requirements in effect at the time the student was originally enrolled.

2. A student who:

   a. reenrolls in the same program in which he/she was last enrolled, and
   b. reenrolls two or more years after he/she last attended the College,

   must meet current graduation requirements. All course work previously completed will be reviewed on a course by course basis to determine whether it meets current graduation requirements. All courses completed will remain on the student's transcript. Only credits for courses which meet the current program requirements will be used in calculating the student's cumulative grade point average.

3. If a student reenrolls in a program different from the one in which he/she was last enrolled, each

course previously taken will be evaluated to determine whether it meets the requirements of the new program. Only credits for courses which meet the requirements of the current program will be used in calculating the student's cumulative grade point average. However, all courses completed will remain on the student's transcript. Students reenrolling in a new program are required to meet the graduation requirements for the new program in effect at the time they reenroll.

Special circumstances may be appealed to the Dean of Academic Affairs or his/her designee, who may waive the conditions given above.

Change of Program

A change of program may be made at the beginning of any semester. Currently enrolled students who wish to change from one program of study to another must follow the steps below:

1. Complete an "Admissions Application" and submit it to the Admissions Office. Acceptance into the new program will be based on the date the applicant's file is complete in the Admissions Office.

2. Complete a "Curriculum Change" form; obtain all required signatures (advisor, counseling, division director, financial aid, admissions). Submit the form to the Student Records Office.

When a student changes his/her program, all credits earned in the prior program will be evaluated for transfer to the new program. All prior course work will appear on the student's transcript. Only courses applicable to the new program will be used to calculate the student's new cumulative grade point average.

Transfer Students

Students from other colleges who wish to transfer to The Williamsport Area Community College must follow the procedure below:

1. Complete steps listed under Admission Procedure, (see page 2) with the exception of "High School Graduation."

2. Ask all college(s) previously attended to send an official transcript to The Williamsport Area Community College Admissions Office. The College may also request a high school transcript.

3. Provide course descriptions or a college catalog to the Admissions Office for use in evaluating courses completed at another institution.

Transfer Credit

Transfer credit includes: credit for courses earned at another institution, college credit earned before high school graduation, service credit, United States Armed Forces Institute (USAFI) credit, and credit earned through the College Level Examination Program (CLEP).

A maximum of 30 transfer credits may be applied toward a degree or certificate. Courses to be considered for transfer must have been completed with a grade of "C" or better. However, if a student earns a cumulative "C" average or better in sequential courses (for example, English 1 and English 2) an exception may be made based on the evaluation of the courses. Courses taken more than two years before the student enrolls at The Williamsport Area Community College may be evaluated (on a course-by-course basis) to determine if they are equivalent to courses currently required in the student's program. A copy of the evaluation of transfer credit will be sent to the student.

All transfer credit will appear on the student's transcript after the student successfully completes one semester of academic work at The Williamsport Area Community College. Transfer credit will appear on the transcript with credit value only. Transfer students will enroll without any cumulative grade point average. A student must be enrolled in courses at The Williamsport Area Community College for at least the last 12 credit hours of his/her program. Requirements for the evaluation of different forms of transfer credit are listed below.

1. Transfer from Another Institution

   All credits earned at a previously attended institution(s) will be evaluated for transfer credit. The student must send The Williamsport Area Community College Admissions Office an official catalog description of each course to be evaluated and a description of the grading codes (if the grade codes are not defined on the transcript) from each institution from which courses are to be evaluated. These materials must consist of either of the following: the institution's catalog or a photocopy of the course descriptions and the grade codes description taken from the institution's catalog.

2. College Credit Earned Before High School Graduation

   College credit earned before high school graduation will be evaluated only if the college where the work was taken issues an official college transcript. Students who have earned college credit before graduation from high school must follow the procedure defined under "Transfer from Another Institution."

3. Service Credit

   Veterans who have served 12 consecutive months of active military duty will be granted credit for health and/or physical education (if required in their program). The student must submit a copy of his/her report of separation (DD-214) and complete a waiver for physical education with the Health Sciences Office.

4. United States Armed Forces Institute Credit (USAFI)

   The College may grant credit for USAFI credit. An official transcript must be mailed directly from the USAFI in Madison, Wisconsin to the College's Admissions Office. Credit will be granted for those courses which are substantially comparable to courses offered at The Williamsport Area Community College. If the student's program includes electives, elective credit will be granted for those courses which are not comparable.

5. College Level Examination Program (CLEP)

   The College will examine CLEP results and may grant college credit to individuals who score at least in the fiftieth percentile rank on the CLEP exam. The student must provide an official copy of his/her CLEP scores to the College's Admissions Office. The College will determine whether credit earned through CLEP will be issued for required credit courses or as elective credit.

Non-Degree Students

A student who does not wish to pursue a degree or certificate program is a non-degree student. Such students are permitted to select courses without regard to degree or certificate requirements. If at a later date, a non-degree student desires to enroll in a specific degree or certificate program, an application for admission to the program, together with any other required credentials, must be submitted to the Admissions Office.

Non-degree students are not eligible for financial aid. They are permitted to schedule classes on a first-come/first-served basis (after currently enrolled students have been given the opportunity to schedule classes). Non-degree students must complete an "Admissions Application" form the first time they schedule credit classes, but are not required to pay the application fee.

Transfer Of Credits To Four-Year Institutions

The Williamsport Area Community College has established formal agreements with Cheyney, Kutztown, Lincoln, Lock Haven, Mansfield, and Millersville Universities in Pennsylvania. These agreements transfer the Associate of Arts at The Williamsport Area Community College, under general conditions, to these institutions with junior-level status.

The College is negotiating similar formal agreements with the following college and universities: Bloomsburg University, Rochester Institute of Technology, and Wilkes College.

Williamsport Area Community College graduates earning Associate of Applied Science or Associate of Applied Arts degrees can often transfer significant portions of their A.A.S. or A.A.A. program of study to a four-year college or university. The College has a formal agreement with Lock Haven University which recognizes A.A.S. and A.A.A. degrees from The Williamsport Area Community College as part of a Bachelor of Science in General Studies-Technology Management degree. B.S. degrees with specialities in areas other than management are under discussion between the College and Lock Haven University.

If you would like detailed information about transferability of specific courses or programs, please consult your division director.

Housing

Students are responsible for making their own housing arrangements. The Admissions Office, Academic Center, Room 104, maintains a list of area housing facilities for men and women. Prospective students are urged to make arrangements for housing as soon as possible after being admitted. A brochure containing guidelines on obtaining housing is available. The College does not sponsor, approve, disapprove, evaluate or supervise the listed facilities. Any agreement for renting is solely between the landlord and student.

Health Services

Student Health Services is staffed by a registered nurse and is open Monday through Friday from 8 a.m. to 3:30 p.m. during the fall and spring semesters. First aid, health counseling, and assistance in obtaining private health care is available. Costs for private health care are the student's responsibility. Student Health Services is located on the first floor of the Gymnasium, Room 104.

Student Retention Data

Persons interested in obtaining data on student retention (number of students who enroll at the College and number who actually complete their program) should contact the Registrar/Director of Institutional Research, Academic Center, Room 110.

CAMPUS AND FACILITIES

In addition to its Central Campus in Williamsport, the College offers credit programs at the following locations:

Aviation Center - Adjacent to Williamsport/Lycoming County Airport in Montoursville

Aviation Maintenance Technician
Aviation Technology

Danville State Farm Laboratory - South of Danville on Route 11, North
Agribusiness
Dairy Herd Management

Earth Science Center - South of Williamsport on Route 15

Agribusiness
Dairy Herd Management
Floriculture
Forest Technology
Landscape Nursery Technology
Outdoor Power Equipment
Service and Operation of Heavy Construction Equipment

North Campus

The North Campus of The Williamsport Area Community College is located on Route 6 between Wellsboro and Mansfield. Students may enroll in programs leading to a degree or certificate in Accounting, Business Management, Computer Information Systems, Electronics, General Studies, Practical Nursing, and Secretarial Office Administration. Students may also participate in the Cooperative Education program.

The North Campus offers a flexible schedule of day and evening courses throughout the year. Students, including those enrolled in programs on the College's Williamsport Campus and non-degree students, may enroll in individual courses at the North Campus.

A variety of non-credit courses are also offered throughout the year.

Students applying for admission to programs offered at the North Campus must follow the College's Admission Procedures (see page 2). The policies, procedures, tuition and programs for students enrolled at the North Campus are the same as those for students at the central campus in Williamsport.

Anyone interested in more information on the North Campus should contact the North Campus/ RD 3, Box 436/ Wellsboro, PA 16901/ (717) 724-7703.

For additional information on the College's facilities, including access for the handicapped, contact the Office of Admissions, Academic Center, Room 104.

TUITION AND FEES

TUITION AND FEES

Full-Time Students

State regulations define a full-time student as anyone enrolled for 12 or more credit-hours per semester. However, tuition and related fees are based solely on the number of credits for which you are enrolled, as described below.

Application Fee

Applicants for status as full-time students in degree or certificate programs must include a non-refundable $15 application fee with their "Admission Application." You are required to pay this non-refundable fee only once.

Tuition Deposit

All applicants who have been accepted as full-time degree or certificate students must pay a $100 tuition deposit to hold a class reservation in the first semester for which they have applied.

If you enroll at the designated time, the deposit will be credited to your tuition for the first semester. If you do not enroll and notify the College by the predetermined deadline, the College will refund 80 percent of the tuition deposit.

Tuition and Related Fees—1986-87*

Tuition and related fees are governed by your area of residence and are based on a per credit hour charge. To calculate your tuition and fees for one semester, multiply the number of credits for which you are enrolled by the total per credit charge under the appropriate residence category. The four categories of residence and the tuition and fees for each are:

1. **Sponsor of The Williamsport Area Community College**

   A sponsor district is one which contributes to the financial support of the College. If you reside in the City of Williamsport, which sponsors The Williamsport Area Community College, you must secure a Certificate of Sponsorship in order to be eligible for sponsoring district tuition rates. The form should be mailed to the Bursar's Office after you have been accepted and as soon as possible prior to registration.

	PER CREDIT HOUR CHARGE
Tuition	$50.50
Service Fee	none
Activity Fee	$ 1.25
TOTAL	$51.75

2. **District Sponsoring Another Community College**

   If you reside in a district which sponsors another Pennsylvania community college, you must obtain permission, IN WRITING, from the Board of Trustees of the other community college in order to qualify for sponsoring district tuition and fees. If you do not obtain permission, you will be charged the same tuition and fees as non-sponsor students.

	PER CREDIT HOUR CHARGE
Tuition	$50.50
Service Fee	$ 8.65
Activity Fee	$ 1.25
TOTAL	$60.40

3. **Non-Sponsoring Pennsylvania District**

   If you reside in a Pennsylvania district which does not sponsor a Pennsylvania community college, you will pay the following tuition and fees:

	PER CREDIT HOUR CHARGE
Tuition	$101.00
Service Fee	$ 8.65
Activity Fee	$ 1.25
TOTAL	$110.90

4. **Out-of-State Resident**

   Out-of-state students will pay the following tuition and fees:

	PER CREDIT HOUR CHARGE
Tuition	$151.50
Service Fee	$ 17.30
Activity Fee	$ 1.25
TOTAL	$170.05

*Tuition and Fees are subject to change without notice.

Deferred Payment

The College shall not knowingly accept a partial payment from any student except as required for tuition deposits, financial aid plans, or within the guidelines established by the Board of Trustees' policy for deferred fee status (given below).

Any student whose fee is in arrears after the first day of classes shall be subject to a $20 deferred processing fee.

Students who are unable to pay tuition and fees in full by the due date, may make a partial payment (as determined by the College) and pay the remaining portion in two equal installments at 30-day intervals following the beginning of the semester. A processing fee will be charged for this installment plan. Nullification or adjustment of financial aid awards shall not alter the student's obligation to complete installment payments to the College.

Students who fail to meet their financial obligations under this plan shall be administratively withdrawn. Such termination will not cancel the student's financial obligations to the College. Students participating in an installment plan will have their grades and transcripts held until their accounts are settled.

Books and Supplies

Expenses for books and supplies will vary considerably from program to program. The College tries to keep expenses as low as possible by operating the College Bookstore on a low-cost basis. For full-time students the cost for books and supplies can be as high as $300 per semester.

Tools

When you have been accepted in a particular program, the Admissions Office will provide you with a list of required tools. We recommend that you do not buy any tools or protective clothing for any

course before attending the first class. Tool costs vary greatly, depending on your program. Prospective students should contact the Admissions Office for a list of estimated tool costs for each program. The tools will be your personal property. In many cases, students will use these tools throughout their careers.

Transcripts

The student's grade report is an unofficial transcript (identical to the official transcript, but without the official seal) which shows all course work completed by the student. Students may use their grade report when an unofficial transcript is needed. Official transcripts are only those transcripts sent to another institution, agency, or employer.

Students will be charged $1.00 for each additional transcript. All requests for additional transcripts must be submitted in writing to the Student Records Office. The request must contain the following information: the student's name while attending The Williamsport Area Community College, the student's address and social security number, the dates of enrollment, the name of the program(s) in which the student was enrolled, and a complete address to which the transcript is to be sent. If the transcript is sent to the student or to his/her address, it is considered an unofficial copy.

Graduation Fees

Any students who wish to receive an engraved diploma or certificate when they graduate must pay a $5.00 fee when they petition to graduate. If a student orders a diploma or certificate after the advertised date for ordering a diploma (i.e., two months prior to the date of graduation), the student must pay a special processing fee of $10.00.

If a graduating student does not wish to receive an engraved certificate or diploma, he/she will not be charged the graduation fee but must still file a petition. (See Petition to Graduate on page 132.)

Refunds

Students who terminate enrollment at the College or withdraw from a course(s) may obtain a refund or partial refund of tuition, service fees and activity fees if they follow the procedures below.

If a student finds it necessary to terminate or to withdraw from the College for any reason, the student must:

1. Officially terminate or withdraw by presenting to the Student Records Office a signed, properly executed "Student Status Change" form(s).
2. Satisfactorily account for all property issued by the College.
3. Settle all outstanding College obligations.

No refunds will be issued unless a student completes the above steps and initiates them within the proper time frame.

Charges for tuition and fees are refundable upon proper official withdrawal or termination from the College. Application fees are not refundable. In order to obtain a refund, the "Request for Refund" form and the necessary "Student Status Change" forms must be submitted at the same time.

Refunds of tuition and fees will be made according to the following schedule for fall and spring semesters:

Prior to the first day of classes	100% Refund
First day through third week	70% Refund
After third week of classes	No Refund

Refunds will be made according to the following schedule for the summer semesters and for courses that do not meet for the entire semester (for example, some weekend college classes and "mini-courses," eight-week courses, etc.).

Prior to the first day of classes	100% Refund
First day through 20% of total instructional hours	70% Refund
After 20% of total instructional hours	No Refund

For additional information on termination and withdrawal policies, please see "Terminations, Withdrawals, and Refunds" in the Academic Information section of this Catalog.

FINANCIAL AID

Recognizing that the cost of education is often greater than the student and his/her family can afford without help, the Financial Aid Office helps students obtain financial assistance through a variety of aid programs:

- Grants
- Scholarships
- Loans
- College Work-Study Program
- Veteran's Benefits
- Vocational Rehabilitation Sponsorship
- Part-Time Employment

Every student is encouraged to thoroughly explore each of the above programs, and to contact the Financial Aid Office for assistance in obtaining and completing applications for aid.

Employment

Students interested in part-time employment other than the College Work-Study programs should contact the Advisement and Career Services Center for further information.

Special Attention

Deadlines

Students who want the fullest consideration for all awards should have all needed application materials complete and on file in the Financial Aid Office as soon as possible. For the 1987-88 year, for example, completed applications for some forms of aid should be filed by March 1, 1987. Applications received after this date will be processed and students filing late will be considered for aid, but only after other applications received by the deadline have been received and awards made.

An exception to the above deadline is made for the Guaranteed Student Loan Program. Loan applications may be submitted at any time during the year, but should be filed early enough to allow for the six to eight week processing time prior to loan approval and release of funds to the applicant.

Need Analysis Forms

To determine a student's financial eligibility for awards, especially Supplemental Grants and Work-Study awards, a review of the family financial situation must be completed.

The College uses the Pennsylvania Higher Education Assistance Agency system for need analysis purposes. These forms can be obtained from the College's Financial Aid Office, high schools and the state agency.

Policy on Satisfactory Academic Progress

This policy applies to all students receiving financial aid from federal or state student assistance programs:

Federal Programs (Pell/SEOG/College Work Study/Guaranteed Student Loan/Plus Loan):

A full-time student who receives aid from the Pell, SEOG, or College Work Study programs must make satisfactory academic progress in order to continue to be eligible for aid. Students shall be considered to be making satisfactory progress if, based on academic achievement, the College allows them to continue their enrollment, provided that they successfully complete at least 24 credits by the end of the first academic year.

Students whose cumulative grade point average falls below 2.00 will be placed on academic probation, and a decision on their continued enrollment will be made by the Probation Committee. Students on academic probation may continue to receive financial aid, provided they successfully complete at least 24 credits by the end of the first academic year.

After receiving aid for the fourth semester of a two-year program or the second semester of a one-year program the student will not be eligible for additional aid until after graduation from the program. In addition, any student who changes programs two or more times will be determined ineligible pending further review.

Any part-time student who receives aid and who fails, withdraws from, or receives an incomplete in two or more courses in which he/she was enrolled during an academic year (or the equivalent) shall be ineligible for further aid until he/she completes courses equivalent in credits to the number which were not successfully completed.

Credits earned through advanced placement or life experience and external transfer credits may be used to meet graduation requirements, but may not be included in the number needed for satisfactory progress for financial aid purposes.

Students determined to be ineligible for additional aid may appeal this determination by writing to the Director of Financial Aid or his/her designee, stating the basis for appeal. Exceptions may be made based on extenuating circumstances including, but not limited to, documented illness, change of program or

the required completion of Developmental Studies courses. The Director or designee will inform the student in writing of the decision, specifying the duration of time or other conditions under which an exception has been made, or explaining the reason for denying the appeal and detailing the actions necessary for the student to regain eligibility. A student may request a review of the decision in a meeting of the student, Director of Financial Aid and the Dean of Student Services.

State Program (PHEAA):

PHEAA regulations require that for each year of a PHEAA grant, a student must successfully complete 24 credits, otherwise the student will be ineligible to receive additional grants. Appeals must be made directly to PHEAA. This policy is subject to revision by PHEAA.

new, general

Amnesty (For Federal Program)

For returning students who have not been enrolled during the past five years, prior academic performance will not be considered when satisfactory academic progress is measured.

NOTE:

SEOG = Supplemental Educational Opportunity Grant
CWS = College Work-Study Program
PHEAA = Pennsylvania Higher Education Assistance Agency
GSL = Guaranteed Student Loan
PLUS = Parents Loan for Undergraduate Students

Veterans Information/Benefits

The College has been approved for the education and training of veterans. The Financial Aid Office provides counseling and assistance to veterans. All veterans must register in the Financial Aid Office in order to collect G.I. benefits or to initiate action concerning the Veterans' Administration. Veterans should bring a copy of their DD 214 and, when applicable, their marriage certificate and children's birth certificates, to the Financial Aid Office for their first interview. The Financial Aid Office maintains a complete supply of forms for such purposes.

The College does not handle advance payment requests.

Additional Information and Assistance with Applications

Additional information about all of the financial aid programs listed above is available from the Financial Aid Office at the address below. We advise you to request a copy of the College's Financial Aid Brochure, which provides more information about all of these programs. For information and applications, call, write, or visit:

Financial Aid Office
The Williamsport Area Community College
1005 West Third Street
Williamsport, Pennsylvania 17701
(717) 327-4766

DEGREES AND PROGRAMS

The Williamsport Area Community College is proud to offer flexible scheduling that allows all segments of our community—including employed persons and others with regular daytime responsibilities—the opportunity for education.

Along with regular daytime and evening classes, the College also offers special program options entitled Minimester and Weekend College. These options are described here.

MINIMESTER

Minimester is a new mid-semester programming initiative developed to meet the needs of today's active individuals who want a maximum return for the time and money they invest in education.

Short-term, intensive study classes make minimester the perfect choice for busy men and women who want to continue their studies on a college level. Courses cover a variety of subjects, ranging from microcomputers to human services. Class schedules vary and tuition is based on a per credit charge.

For more information on the minimester programming initiative, please contact the College's Office of Admissions.

WEEKEND COLLEGE

The Weekend College program offers students the opportunity to take associate degree courses on the weekends. Courses available through the program vary from semester to semester, but usually include a variety of courses in business and computer technology plus selected courses in the liberal arts and the technologies.

Weekend College also offers a number of scheduling options, including:

Saturday classes which meet three hours a week for 16 weeks.

Concentrated study courses which meet on Friday evenings, on Saturdays, and on Sunday mornings for four consecutive weekends.

Courses which meet every third weekend on Friday evenings, on Saturdays, and on Sundays.

For more information on Weekend College, contact the College's Business and Computer Technologies Division at (717) 326-3761, ext. 225, or the Office of Admissions at (717) 327-4761.

ASSOCIATE DEGREES

The Williamsport Area Community College awards three types of associate degrees. Associate degree programs can help you prepare for employment or serve as the basis for additional education. Associate degree programs require a minimum of 60 credits.

The Associate of Applied Arts (AAA) is offered in Advertising Art, Broadcasting and Journalism. These programs offer students the opportunity to gain the technical and professional skills needed for employment and to prepare for transfer to a four-year college.

The Associate of Applied Science (AAS) degree programs offer students the opportunity to gain the technical and occupational skills needed for employment. These programs also prepare students for transfer to four-year colleges.

The Associate of Arts (AA) degree programs are designed to parallel the first two years of a liberal arts education at a four-year college. Credits earned can usually be transferred toward the first two years of a bachelor's degree.

Associate of Applied Arts

The Associate of Applied Arts programs offer knowledge and skills in programs emphasizing communications. Each program has prescribed courses that you must complete in order to graduate.

The College offers Associate of Applied Arts (AAA) degrees in the following areas:

Integrated Studies
- Advertising Art
- Broadcasting
- Journalism

Associate of Applied Science

If you want to gain knowledge and skills in a technical or occupational area, you can earn an Associate of Applied Science degree. Each program has prescribed courses that you must complete in order to graduate.

The College offers Associate of Applied Science (AAS) degrees in the following areas:

Business and Computer Technologies
- Accounting
- Business Management
- Computer Information Systems
- Retail Management
- Secretarial Office Administration
  - Executive
  - Legal
  - Medical
- Word Processing

Construction Technology
- Air Conditioning/Refrigeration
- Architectural Technology
- Building Construction Technology
- Electrical Technology

Health Sciences
- Dental Hygiene
- Dietetic Technician*
- Food & Hospitality Management
- Occupational Therapy Assistant
- Radiography

Industrial Technology
- Automated Manufacturing
- Civil Engineering Technology
- Electronics Technology
  - Automation Instrumentation
  - Biomedical Electronics
  - Computer Automation Maintenance
  - Electronics Engineering
  - Fiber Optic Communication
  - Laser Electronics
  - Telecommunication Electronics
- Engineering Drafting Technology
- Tool Design Technology
- Toolmaking Technology

Integrated Studies
- Graphic Arts
- Human Service
- Technical Illustration
- Technology Studies

Natural Resources Management
- Agribusiness
- Floriculture
- Forest Technology
- Landscape Nursery Technology

Transportation Technology
- Automotive Technology
- Aviation Technology
- Diesel Technology

*not accepting new students for 1986-87.

Associate of Arts
(College and University Transfer)

The General Studies and Individual Studies Programs

The Williamsport Area Community College offers an Associate of Arts (AA) degree in both the General Studies Program and the Individual Studies Program. Both programs are designed to provide the student with the opportunity to:

1. Participate in a planned educational program of studies leading to an Associate Degree.
2. Elect, from a broad range of courses, those courses most appropriate to individual academic and career goals.
3. Interact on a regular basis with the College staff and fellow students in the cultural, social, and recreational activities that lead to intellectual growth and emotional maturity.
4. Demonstrate a mastery of basic mathematics concepts and skills.
5. Display in written and verbal presentations the ability to communicate clearly, correctly, and convincingly.

The General Studies Program is designed primarily for transfer to four-year college degree programs. (For additional information on transfer, see Transfer of Credits to Four-year Institutions on page 6.) It provides the opportunity to begin academic course work leading to many professional careers. Specific curriculum guides have been developed in the following career areas:

- Business Administration
- Communications Emphasis
- Education Emphasis
- Math-Science Emphasis
- Pre-Law Emphasis
- Pre-Medical Emphasis
- Pre-Theological Emphasis

The Individual Studies program offers students the maximum flexibility in designing an associate degree program to meet his or her needs. The Individual Studies program also offers students waiting for an opening in a particular career-oriented program the opportunity to begin work leading to a degree. Respiratory Therapy Technician is a special Individual Studies option offered in cooperation with Harrisburg Area Community College.

CERTIFICATE IN SPECIAL FIELD OF STUDY

These programs are occupational in nature and heavily skills oriented. They are not primarily for transfer but in certain cases can be transferred to some colleges. Certificate programs vary in length, but do not exceed two years of course work.

A feature of these Certificate in Special Field of Study programs is the optional elective. As the name implies, an optional elective can be chosen to broaden the basic academic work required of all college students. You are urged to make use of the opportunity to enrich your educational experience.

Certificates are offered in the following areas:

Business and Computer Technologies
- Clerical Studies
- Computer Operations Technology

Construction Technology
- Air Conditioning/Refrigeration
- Construction Carpentry
- Electrical Occupations
- Plumbing and Heating

Health Sciences
- Culinary Arts
- Dental Assisting
- Practical Nursing
- Surgical Technology

Industrial Technology
- Industrial Drafting
- Machinist General
- Welding

Integrated Studies
- Printing

Natural Resources Management
- Dairy Herd Management
- Outdoor Power Equipment
- Service & Operation of Heavy Construction Equipment

Transportation Technology
- Auto Body Repair
- Automotive Mechanics
- Aviation Maintenance Technician
- Diesel Mechanics

DIVISIONS AND PROGRAMS

BUSINESS & COMPUTER TECHNOLOGIES
Division Director, Dr. Donald B. Bergerstock

- Accounting (BA)
- Business Management (BM)
- Clerical Studies (BT)
- Computer Information Systems (CS)
- Computer Operations Technology (CO)
- Retail Management (RM)
- Secretarial Office Administration (SA)
  - Executive
  - Legal
  - Medical
- Word Processing (WP)
- **College & University Transfer Program**
  - Business Administration
- **Exam Preparation**
  - Real Estate

CONSTRUCTION TECHNOLOGY
Division Director, Dr. Ralph Horne

- Air Conditioning/Refrigeration (RA/RC)
- Architectural Technology (AT)
- Building Construction Technology (CB)
- Construction Carpentry (CC)
- Electrical Occupations (EO)
- Electrical Technology (EL)
- Plumbing and Heating (PL)

HEALTH SCIENCES
Division Director, Davie Jane Nestarick

- Culinary Arts (CA)
- Dental Assisting (DA)
- Food & Hospitality Management (FH)
- Occupational Therapy Assistant (OC)
- Practical Nursing (NU)
- Quantity Food Production & Service (QF)
- Radiography (RT)
- Surgical Technology (ST)
- **Service Courses**
  - Medical Terminology
  - Fitness and Lifetime Sports

INDUSTRIAL TECHNOLOGY
Division Director, Dr. George A. Baker

- Automated Manufacturing (AF)
- Civil Engineering Technology (CT)
- Electronics Technology (ET)
  - Automation Instrumentation Emphasis
  - Biomedical Electronics Emphasis
  - Computer Automation Maintenance Emphasis
  - Electronics Engineering Emphasis
  - Fiber Optic Communication Emphasis
  - Laser Electronics Emphasis
  - Telecommuncation Electronics Emphasis
- Engineering Drafting Technology (ED)
- Industrial Drafting (ID)

Machinist General (MG)
Tool Design Technology (TD)
Toolmaking Technology (TT)
Welding (WE)

INTEGRATED STUDIES
Division Director, Dr. Daniel J. Doyle
Assistant Director, Dr. Robert W. Wolfe

Advertising Art (AR)
Broadcasting (BR)
Graphic Arts (GA)
Human Service (HS)
Journalism (JO)
Printing (GP)
Technical Illustration (TI)
Technology Studies (TS)
Service Courses
Advertising
Biology
Chemistry
Economics
Education
English
Environmental Science
Geography
Geology
German
History
Mathematics
Philosophy
Physics
Political Science
Psychology
Sociology
Spanish

NATURAL RESOURCES MANAGEMENT
Division Director, Dr. Wayne Longbrake

Agribusiness (AG)
Dairy Herd Management (DY)
Floriculture (FL)
Forest Technology (FR)
Landscape Nursery Technology (NM)
Outdoor Power Equipment (SM)
Service & Operation of Heavy Construction Equipment (SO)

TRANSPORTATION TECHNOLOGY
Division Director, Dr. Wayne Longbrake

Auto Body Repair (AB)
Automotive Mechanics (AM)
Automotive Technology (AU)
Aviation Maintenance Technician (AC)
Aviation Technology (AD)
Diesel Mechanics (DM)
Diesel Technology (DD)

COLLEGE & UNIVERSITY TRANSFER PROGRAMS
Dr. Daniel J. Doyle

General Studies
Communications Emphasis
Education Emphasis
Math-Science Emphasis
Pre-Law Emphasis
Pre-Medical Emphasis
Pre-Theological Emphasis

Individual Studies
Respiratory Therapy Emphasis

CENTER FOR LIFELONG EDUCATION
Director, Barbara A. Danko

Non-Credit Courses & Programs
Specialized Business & Industrial Programs
Service Agency and Certification Programs

Exam Preparation
Engineer In Training

COOPERATIVE EDUCATION (CED)
Director of Experiential Learning, William C. Bradshaw

Courses in conjunction with Divisions and Programs

DEVELOPMENTAL STUDIES
Director, R. Dean Foster

COPing Program
Developmental Studies Courses

SECONDARY VOCATIONAL PROGRAMS
Director, Dr. Edward Geer

Auto Body Repair
Automotive Mechanics
Aviation Maintenance Technician
Carpentry
Cooperative Education (CAPSTONE)
Cosmetology
Drafting - Architectural/Mechanical
Electrical Construction
Forestry
Health Assistant
Horticulture
Machine Shop
Quantity Food Production and Service
Small Engine Repair
Welding

ACCOUNTING (BA)

Associate Degree/2 years

This program offers a broad business background with a specialization in accounting. It begins on the elementary levels of accounting and business and advances to more complex levels.

Types of Jobs: Public, private, government, and corporate accounting, cost accounting, tax consultant, auditor, comptroller.

FIRST SEMESTER		Credits
ACC 112	Accounting I*	3
MGT 110	Principles of Business*	3
MGT 111	Business Mathematics	3
SEC 111	Typewriting I	3
ENL 111	English Composition I	3
PED	Fitness & Lifetime Sports	1
		16

SECOND SEMESTER		Credits
ACC 122	Accounting II	3
ACC 125	Income Tax Accounting	3
CSC 118	Fundamentals of Computer Science*	3
MGT 230	Business Communications	3
PED	Fitness & Lifetime Sports	1
	Elective-Social Science/Humanities	3
		16

THIRD SEMESTER		Credits
ACC 231	Cost Accounting	3
ACC 232	Intermediate Accounting I	3
MGT 231	Business Law I*	3
	Elective-Computer Science*	3
	Elective*	3
		15

FOURTH SEMESTER		Credits
ACC 244	Intermediate Accounting II	3
MGT 241	Business Law II	3
ECO 201	Principles of Economics*	3
ENL 202	Fundamentals of Speech	3
	Elective*	3
		15

*Equivalent AIB (American Institute of Banking) courses may be substituted with Division approval.

Co-op Options:
Parallel
Summer

EVENING PROGRAM

Courses required for the associate degree in Accounting are also offered in the evenings and on weekends for the convenience of students who are unable to attend weekday classes. Students may complete all courses required for a degree in Accounting by enrolling in evening and weekend courses on a part-time basis. Part-time students may require more than two years to complete the program.

PROGRAM OBJECTIVES

The general objective of the Accounting program is to prepare the student for employment in the accounting field—public, private, and government. The program will also upgrade the skills of those now employed in this field.

The graduate should be able to:

1. identify and apply generally accepted accounting principles.
2. organize, prepare, and interpret financial data and statements.
3. demonstrate skill in effective verbal and written communication.
4. use and interpret federal and state income tax laws applicable to the individual and sole proprietor.
5. identify, use and interpret cost accounting information.
6. identify the laws which affect business.
7. apply computer knowledge and techniques in the preparation and analysis of financial statements and data.
8. apply human relations skills in the business environment.
9. apply general knowledge of the social sciences and understand their effect on our society.
10. identify the need for physical fitness and positive leisure activities.

ADVERTISING ART (AR)

Associate Degree/2 years

This program prepares students for employment in advertising art and related fields. Students develop skills in drawing, painting, designing, illustrating, coloring, paste-up, rendering, composing, layout, lettering, sketching, computer graphics, and proper use of tools, equipment, and materials. Related courses in journalism, photography, graphic arts, and courses in English, mathematics, and science increase the student's career opportunities. Some prior training in art is desirable.

Types of Jobs: Advertising artist, art director, layout artist, illustrator; mechanical work, general board work.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER		Credits
ART 111	Basic Drawing	3
MCM111	Introduction to Mass Communications	3
GCO 515	Layout and Design	3
JOU 114	Mass Media Photography	3
ENL 111	English Composition I	3
PED	Fitness & Lifetime Sports	1
		16

SECOND SEMESTER		Credits
ART 231	Color and Design	3
GCO 525	Process Camera	3
ENL 121	English Composition II	
	or	3
ENL 201	Technical Writing	
MTH 101	Introduction to Mathematics	3
PED	Fitness & Lifetime Sports	1
	Elective-Humanities/Social Sciences	3
		16

THIRD SEMESTER		Credits
ART 121	Basic Painting	3
ART 232	Lettering and Layout	3
ART 233	Introduction to Art	3
GCO 516	Typographic Composition	3
	Math/Science Elective	3/4
		15/16

FOURTH SEMESTER		Credits
ART 241	Media and Techniques	3
ART 242	Advertising Design	3
ADV 101	Principles of Advertising	3
GCO 526	Film Assembly and Imposition	3
ENL 202	Fundamentals of Speech	3
		15

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the program is to prepare students for jobs in the advertising art field.

A graduate of the Advertising Art program should be able to:

1. demonstrate manipulative skills—including dexterity with pen, brush and ink, carbon pencil, airbrush, art aids, and water base pigments.
2. create renderings (drawing or painting) in a variety of mediums: watercolor, wash, pen and ink, scratchboard, carbon pencil, airbrush, benday screens, and other art techniques used in preparing mechanicals (finished copies used in printing).
3. accurately draw from life the human figure and objects from nature.
4. demonstrate skills in color and design as applied to such variables as mass, color elements, shape, space, movement, time, and unified organization.
5. use lettering and layout skills to prepare precise and aesthetic visuals, recognize and indicate type styles and sizes for printers.
6. demonstrate the ability to create computer-aided visual graphics.
7. demonstrate knowledge of printing and publishing, verbal, visual, and written communications, and advertising.
8. understand basic principles of mass communication.
9. demonstrate desirable attitudes and work habits—creative thinking, the ability to solve problems, good artistic judgement, industriousness, cooperation, responsibility, self-reliance—and an appreciation for and understanding of the art created by past generations.
10. understand and respect the employer-employee relationship, and appreciate the need to produce high quality work.
11. demonstrate knowledge of the relationship between various elements of production (for example typesetting, camera, film assembly and imposition, and mechanical preparation), and the contributions each makes to the total product or service.
12. communicate clearly, verbally, visually and in writing.
13. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.
14. demonstrate sufficient understanding of advertising art for entry-level employment and advancement in the field.

new: show more artwork

AGRIBUSINESS (AG)

Associate Degree/2 years

The Agribusiness program prepares men and women for mid-management positions in an agricultural business and for work in production agriculture as farm owners or supervisors.

Types of Jobs: Farm operator or manager; farm supply and garden center; feed, seed, and fertilizer sales; farm credit, financing, and insurance.

*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER		Credits
AGB 111	Introduction to Agricultural Business	4
AGB 112	Soils, Fertilizer, and Agricultural Chemicals	4
MGT 110	Principles of Business	3
ENL 111	English Composition I	3
PED	Fitness & Lifetime Sports	1
		15

SECOND SEMESTER		Credits
AGB 123	Field & Forage Crop Production	3
AGB 124	Agricultural Financing	3
AGB 125	Dairy Production	3
MGT 111	Business Mathematics	3
MGT 230	Business Communications	3
PED	Fitness & Lifetime Sports	1
		16

THIRD SEMESTER		Credits
AGB 236	Animal Production	4
AGB 237	Special Topics in Agribusiness	3
ACC 112	Accounting I	3
ENL 202	Fundamentals of Speech	3
	Elective-General*	3
		16

FOURTH SEMESTER		Credits
AGB 240	Internship/Co-op	3
AGB 248	Farm Management	3
AGB 249	Agricultural Sales and Service	3
ECO 201	Principles of Economics	3
	Elective-General*	3
		15

Co-op Options:
Parallel
Summer

new

PROGRAM OBJECTIVES

The general objective of the program is to prepare students for jobs in agricultural businesses and to improve and add to the skills of students who will return to their home farms.

A graduate of Agribusiness should be able to:

1. write clear, concise, legible, and accurate technical reports.
2. use skills in verbal communication, speak logically, and use various types of communication techniques to promote sales and service and to develop leadership skills.
3. interpret farm records and apply the principles of management and economics as they relate to the farm, including agribusiness financing and interpreting computer print-outs.
4. analyze procedures involved in breeding, feeding, housing, and managing a dairy herd.
5. describe the physical and biological properties of soil, the use and general effects of fertilizer, and the proper use of the chemicals in crop and livestock production.
6. identify various types of business organizations and business principles—including planning, organizing, financing and marketing.
7. describe the principles of breeding, feeding, marketing, and management of beef, swine, sheep, and poultry.
8. explain the marketing of agricultural products—including the psychology of selling and pricing and the importance of customer service.
9. demonstrate an attitude of responsibility toward agribusiness and the world of work.
10. use appropriate math skills to solve applied problems in agribusiness.
11. demonstrate an appreciation of physical fitness and lifelong recreational activities.
12. use microcomputers in farm and agribusiness management decision making.

AIR CONDITIONING/ REFRIGERATION (RA)

Associate Degree/2 years

This program provides background knowledge and skills training in air conditioning, temperature and humidity control, air circulation, duct system design, thermostats, ventilating equipment and automatic controls. Students learn to repair equipment in the lab segments of the program. The combination of lab practice and theory prepares students for employment and advancement in today's air conditioning and environmental control industry.

Types of Jobs: Refrigeration and air conditioning equipment mechanic, estimator, sales representative, air conditioning lab technician, industrial physical plant maintenance and environmental control.

Recommended High School Subjects: Two years of algebra, one year of science.

FIRST SEMESTER		Credits
ACR 511	Introduction to Refrigeration	5
ELT 531	Air Conditioning/Refrigeration Electricity	6
MTH 103	College Algebra & Trigonometry I	3
ENL 111	English Composition I	3
		17

SECOND SEMESTER		Credits
ACR 521	Commercial Refrigeration Systems	4
ACR 522	Installation & Service Problems—Commercial	4
ELT 541	Electric Motors & Refrigeration Controls	5
PHS 500	Physics Survey	3
PED	Fitness & Lifetime Sports	1
		17

THIRD SEMESTER		Credits
ACR 231	Theory & Operation of Air Conditioning & Heating Systems	4
ACR 232	Installation & Service Problems—Air Conditioning	5
PSY 111	General Psychology	3
PED	Fitness & Lifetime Sports	1
	Elective-Math/Computer Science	3
		16

FOURTH SEMESTER		Credits
ACR 241	Air Movement and Ventilation	4
	Elective-Technical/Co-op*	3
ELT 551	Commercial HVAC Control	4
ENL 201	Technical Writing	3
	Elective-Business	3
		17

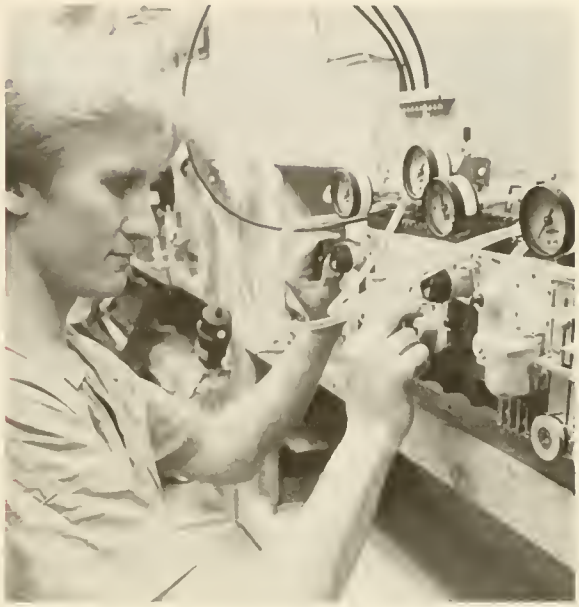
*One technical elective in Air Conditioning/Refrigeration, for example, ACR 242 Solar Heat/Energy Conservation, will be offered each spring semester. Students may also choose an elective from another technical associate degree program or enroll in Co-op.

PROGRAM OBJECTIVES

The goal of this program is to prepare students for employment in the field of commercial, residential, and industrial air conditioning and refrigeration installation, maintenance, and service.

A graduate of the program should be able to:

1. demonstrate the ability to do technical work in a variety of air conditioning and refrigeration fields; apply safety standards and understand and work with technical developments in the industry.



2. apply concepts of algebra and physics in the design, development, and analysis of refrigeration and air conditioning equipment and systems.
3. identify and demonstrate correct use of tools, materials, and equipment used in the trade.
4. demonstrate the ability to read and interpret blueprints and use blueprints when installing equipment.
5. troubleshoot air conditioning and refrigeration equipment using standard troubleshooting procedures.
6. write clear, concise, legible, and accurate technical reports using standard English and apply verbal communication skills in job-related activities.
7. read and interpret electrical schematics and use schematics when installing equipment.
8. estimate the cost of an installation and design an effective system for a specific location and use.
9. demonstrate a responsible attitude in relationships with employers and co-workers and toward the world of work.
10. demonstrate an awareness of and respect for customer/employer relations.
11. demonstrate knowledge of the operation and use of hermetic, reciprocating, and centrifugal compressors.
12. apply basic knowledge of air flow, ventilation, and energy conservation concepts to the design of systems using modern building design and solar energy technology.
13. install and troubleshoot commercial electric, pneumatic, and electronic HVAC control systems.
14. use microcomputers to monitor and control HVAC systems in commercial buildings.

AIR CONDITIONING/ REFRIGERATION (RC)

Certificate/1 year

This program provides the training needed to understand and work with modern refrigeration installations. During lab sessions students troubleshoot and repair the types of breakdowns they will find on the job. The program covers air conditioning, temperature and humidity control and air circulators, and equipment installation—and emphasizes commercial reach-in and walk-in refrigeration units. Students also take introductory courses in electricity, electric motors and refrigeration theory.

Types of Jobs: Refrigeration equipment mechanic (installation, maintenance, repair), refrigeration equipment estimator, equipment sales.

FIRST SEMESTER		Credits
ACR 511	Introduction to Refrigeration	5
ELT 531	Air Conditioning/Refrigeration Electricity	6
MTH 710	Technical Mathematics I	
	or	3
MTH 103	College Algebra & Trigonometry I	
ENL 711	Communications	
	or	3
ENL 111	English Composition I	
		17

SECOND SEMESTER		Credits
ACR 521	Commercial Refrigeration Systems	4
ACR 522	Installation & Service Problems—Commercial	4
ELT 541	Electric Motors & Refrigeration Controls	5
PHS 500	Physics Survey	3
PED	Fitness & Lifetime Sports	1
		17

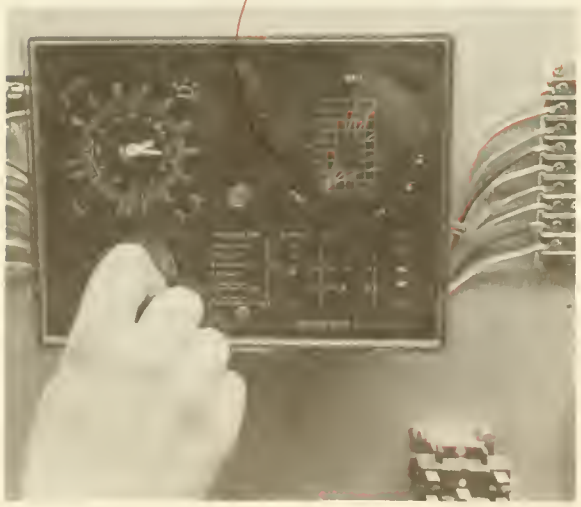
PROGRAM OBJECTIVES

The goal of this program is to prepare students for employment in the field of residential, commercial, and industrial refrigeration installation, maintenance, and service.

A graduate of the program should be able to:

1. identify and demonstrate correct use and care of refrigeration tools, materials, and equipment.
2. read and interpret electrical schematics and use schematics when installing equipment.
3. troubleshoot refrigeration equipment using standard procedures.
4. demonstrate familiarity with the accepted safety standards and requirements of the industry.
5. write clear, concise, legible, and accurate memos, work orders, and reports.
6. demonstrate a responsible attitude in relationships with employers and co-workers and toward the world of work.
7. use elementary math operations (addition, subtraction, multiplication, division), including decimals, fractions, and conversions in refrigeration work.
8. demonstrate a working knowledge of the service and installation of frozen food cabinets, walk-in coolers and ice machines used in supermarkets and restaurants.
9. understand changing air conditioning/refrigeration technology and develop new skills when necessary.
10. demonstrate a knowledge of heat pump installation and service.

new - show person's face



new: show w/ model

ARCHITECTURAL TECHNOLOGY (AT)

Associate Degree/2 years

This program offers the student training within the field of architectural principles and practices which may be used as a basis for employment or for continued study toward a professional degree. Students learn drawing, design, computer aided drafting and design, rendering structural calculation, site planning and systems design and drafting.

Types of Jobs: Architectural drafting, estimator, detailer, or specification writer in private practice, corporate departments, public bureaus, construction firms, landscape architecture firms, and engineering fields.

Recommended High School Subjects: Two years of algebra, one year of science, and art.

FIRST SEMESTER		Credits
ARH 111	Architectural Graphics I	4
ARH 112	Working Drawings—Residential	3
ARH 113	Building Materials I	2
ARH 114	Architectural Structural Systems I	3
ENL 111	English Composition I	3
MTH 103	College Algebra & Trigonometry I	3
		18

SECOND SEMESTER		Credits
ARH 121	Architectural Graphics II	3
ARH 122	Working Drawings—Commercial	3
ARH 124	Architectural Structural Systems II	3
CAD 100	Computer Aided Drafting I	3
ENL 121	English Composition II	3
MTH 104	College Algebra & Trigonometry II	3
		18

THIRD SEMESTER		Credits
ARH 231	Design Studio I	4
ARH 232	Environmental Systems I	3
ARH 233	Building Materials II	3
ARH 235	Architectural CAD I	3
CET 100	Introduction to Surveying	1
PED	Fitness and Lifetime Sports	1
	Elective-Social Science/Humanities	3
		18

FOURTH SEMESTER		Credits
ARH 241	Design Studio II	4
ARH 242	Environmental Systems II	3
ARH 244	Architectural Structural Systems III	3
ARH 245	Architectural CAD II	2
ARH 246	Survey of Architecture	3
ARH 247	Estimating/Building Codes	2
PED	Fitness and Lifetime Sports	1
		18

PROGRAM OBJECTIVES

The general objective of the Architectural Technology program is to give students the academic and practical training needed for a variety of careers. Students develop the entry-level skills needed for employment as architectural technicians. The program may also serve as a basis for additional education in such disciplines as architecture, architectural engineering, landscape architecture, urban design and planning, interior design and building construction.

A graduate of the Architectural Technology program should be able to:

1. understand and appreciate visual art.
2. demonstrate a responsible attitude toward the wise and efficient use of our natural resources.
3. demonstrate mastery of the skills needed for architectural presentations—including drawing, drafting, and model building, as well as computer-aided drawing and design and systems drafting.
4. demonstrate knowledge of building structure, materials, and methods of construction.
5. perform first order structural calculations related to wood, steel, and concrete.
6. demonstrate working knowledge of the environmental systems of structures (water, air quality, etc.); demonstrate skills in designing these systems.
7. explain professional practice and administration.
8. demonstrate basic knowledge of architectural design and planning.
9. apply working knowledge of site engineering and design.
10. demonstrate knowledge of architectural terminology and skills in verbal, written and visual communications.
11. use the mathematical skills needed in this field and math skills necessary for the development of visualization skills and logical thought processes.
12. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.

AUTO BODY REPAIR (AB)

Certificate/2 years

Auto Body Repair prepares students for employment and advancement in this field. Students develop skills in using tools and equipment through practical experience in the College's shop. The program covers the theory and skills of sheet metal repair, sanding, and applying fillers, primers and paint. It includes skills training in shrinking, stretching and welding, panel installation, interior trim and glass replacement. Students also develop skills in frame and steering alignment and in damage estimating and repair.

Types of Jobs: Work for insurance companies, repair shops, dealerships and self-employment.

FIRST SEMESTER		Credits
ABC 713	Basic Auto Body (8 weeks)	7
ABC 714	Metal Work (8 weeks)	7
MTH 710	Technical Mathematics I	3
		17

SECOND SEMESTER		Credits
ABC 723	Auto Body Maintenance (8 weeks)	7
ABC 724	Panel Alignment (8 weeks)	7
ENL 711	Communications	3
		17

THIRD SEMESTER		Credits
ABC 833	Metal Work and Filling (8 weeks)	7
ABC 834	Painting (8 weeks)	7
	Optional Elective	0/3
		14/17

FOURTH SEMESTER		Credits
ABC 843	Tools, Equipment and Collision Repairs (8 weeks)	7
ABC 844	Painting and Estimating (8 weeks)	7
	Optional Elective	0/3
		14/17

Co-op Options:
Alternating
Parallel
Summer

PROGRAM OBJECTIVES

The general goal of this program is to prepare students for careers in auto body repair, collision appraisal and shop management.

A graduate of the Auto Body Repair program should be able to:

1. write clear, concise, legible, and accurate repair orders, estimates, technical reports, and business letters.
2. demonstrate skill in basic communication and the ability to speak logically; use verbal communication skills in promoting sales and service and in developing leadership skills.
3. maintain service records and customer files.
4. identify factors involved in managing an auto body repair shop, including personnel, equipment, and customer relations.
5. diagnose common paint problems and make necessary repairs.
6. make automotive collision repairs to sheet metal components.
7. make repairs to automotive glass, upholstery, trim and related components.
8. demonstrate both efficiency and quality in automotive refinishing work.
9. diagnose and repair mechanical parts, other than sheet metal, damaged by collision.
10. demonstrate a responsible attitude toward auto body repair and the world of work.
11. use basic math skills (addition, subtraction, multiplication, division) including decimals, fractions, and conversions in auto body repair.

change using existing file

AUTOMATED MANUFACTURING (AF)

Associate Degree/2 years

The Automated Manufacturing Program offered by The Williamsport Area Community College is designed to provide students with the opportunity for hands-on experience necessary for employment as a technician in the computer-enhanced manufacturing process. Full-size (rather than miniature or small scale) equipment is utilized. The two-year program is administered by the Industrial Technology Division. Through the integration of mathematics, robotics, metallurgy, programming machinery shop skills, and computer-assisted machining techniques, a student will acquire the necessary skills for employment in an industrial environment.

Types of Jobs: Programmers, Engineer Trainee, Production Specialist, CAM Specialist, Toolmakers, Supervision, C.I.M. Technician.
Recommended High School Subjects: Two years of algebra, one year of science. Machining experience or training.
Prerequisite: Must complete first semester competency requirements of Machine Tool Technology (TT) Program.

FIRST SEMESTER		Credits
MTT 125	Metrology/Quality Control	5
MTT 120	Machining Processes	5
CIM 101	8asic Machine Tool Programming	3
MTH 103	College Algebra/Trigonometry I	3
ENL 111	English Composition I	3
		19

SUMMER		Credits
MTH 104	College Algebra/Trigonometry II	3
ENL 201	Technical Writing	
	or	3
ENL 121	English Composition II	
		6

SECOND SEMESTER		Credits
MTT 210	Tool Technology	5
CIM 121	NC/CNC Programming	3
CIM 122	NC/CNC Machine Operations	4
PHS 100	Physics-Mechanics	4
EDT 101	Mechanical Drawing	2
		18

THIRD SEMESTER		Credits
CIM 201	Grinding/Heat Treatment	5
CIM 202	Advanced Programming	3
CIM 203	Special Processes	2
CIM 204	Tooling	3
PHS 106	Introduction to Metallurgy	4
		17

FOURTH SEMESTER		Credits
CIM 221	CNC Applications	3
CIM 222	Robotic Applications	3
CIM 223	Computer-Aided Design and Manufacturing ((CAD/CAM)	3
CIM 224	Computer-Integrated Machining (CIM)	3
CIM 225	Materials Handling/Automated Guided Vehicles (AGV)	3
	Elective-Humanities/Social Science	3
		18

PROGRAM OBJECTIVES

A graduate of this program should be able to:

1. demonstrate safe work habits when working on machine tools.
2. operate basic machine tools.
3. demonstrate knowledge of programmable machine tools in milling, turning, handling.
4. demonstrate knowledge of machining parameters, torque, feeds and speeds and motion control.
5. define input-output communication for performing automated machining operations.
6. demonstrate skills in computer-aided manufacturing, robotics, an other automated manufacturing methods.
7. demonstrate hands-on experience on system operating modes, command entry methods, tool path, chip removal and program editing, programming and program interfacing.
8. perform operations with a robot using robot arm geometry and work envelope.
9. apply mathematics in the machine tool operation.
10. demonstrate basic verbal and written communication skills.
11. apply systems knowledge.
12. demonstrate materials handling.
13. perform tooling operations.
14. demonstrate computer-integrated manufacturing (CIM) operations.

ok, but how about robots?

AUTOMOTIVE MECHANICS (AM)

Certificate/2 years

The Automotive program trains students in the skills needed to service and repair light commercial and passenger vehicles. The program emphasizes both theory and practical skills. Students develop skills in power train, steering, brakes, ignition, carburetion, engines and electrical components and assemblies.

Types of Jobs: General auto mechanic or technician in a dealership, independent garage, fleet operation, service station, self-employment.

FIRST SEMESTER		Credits
AMT 510	Principles of Engine Systems I (8 weeks)	6
AMT 511	Principles of Engine Systems II (8 weeks)	6
MTH 710	Technical Mathematics I	3
		15

SECOND SEMESTER		Credits
AMT 520	Principles of Chassis Systems (8 weeks)	6
AMT 521	Principles of Power Train & Accessories (8 weeks)	6
ENL 711	Communications	3
		15

THIRD SEMESTER		Credits
AMT 630	Power Train & Accessories Service (8 weeks)	6
AMT 631	Engine System Service (8 weeks)	6
	Elective	3
		15

FOURTH SEMESTER		Credits
AMT 640	Chassis System Service (8 weeks)	6
	Automotive Service Elective*	6
	Elective	3
		15

*Automotive Service Elective - Depending on student interest and enrollment, a minimum of one and a maximum of two of the following courses will be offered during a given semester.

AMT 641	Automatic Transmissions and Air Conditioning Service (8 weeks)
AMT 642	Engine and Electrical Overhaul (8 weeks)
AMT 643	Wheel Alignment and Advanced Chassis Service (8 weeks)

Co-op Options:
Alternating
Parallel
Summer

PROGRAM OBJECTIVES

The goal of this program is to prepare the student for jobs in the automotive field. The program prepares students to take written certification exams—for example, the National Institute for Automotive Service Excellence exam and the Pennsylvania Vehicle Safety Inspection exams, written and practical—for certification as vehicle safety inspectors.

A graduate of the Automotive program should be able to:

1. diagnose and repair common malfunctions of systems and components on popular makes of automobiles.
2. diagnose and repair malfunctions and wear in one of the following specialized automotive service areas:
   a. engines
   b. automatic transmissions
   c. suspension and chassis
3. test, adjust and repair engine electrical, fuel and emission control components.
4. interpret wiring diagrams, test and repair starting, charging, lighting and accessory systems of vehicles.
5. use elementary math operations (addition, subtraction, multiplication, division) including decimals, fractions, and conversions in automotive work.
6. demonstrate the ability to write letters of application, resumes, memos, work orders and reports; recognize current forms and styles of the above.
7. demonstrate a responsible attitude toward the automotive service and manufacturing industry and the world of work.

AUTOMOTIVE TECHNOLOGY (AU)

Associate Degree/2 years

This program covers advanced operating theories of automotive systems and components. Students learn to apply automotive operating principles and to diagnose malfunctions in automotive systems. The program emphasizes the development of skills in service, repair and test procedures using modern equipment and special tools. Business management and specialized service courses prepare students for advancement in the automotive field.

Types of Jobs: Dealership service specialist, assistant manager, skilled jobs in automotive manufacturing, service equipment representative, rebuilding shop assembler, repair shop operator, parts department manager.
Recommended High School Subjects: One course in algebra for career students, two years of algebra for transfer students.

FIRST SEMESTER		Credits
AMT 510	Principles of Engine Systems I (8 weeks)	6
AMT 511	Principles of Engine Systems II (8 weeks)	6
ENL 111	English Composition I	3
MTH 500	Technical Mathematics (2 yr. career)	
	or	3
MTH 103	College Algebra & Trigonometry I (4 yr. transfer)	
		18

SECOND SEMESTER		Credits
AMT 520	Principles of Chassis Systems (8 weeks)	6
AMT 521	Principles of Power Train & Accessories (8 weeks)	6
EDT 101	Mechanical Drawing	2
MTH 105	Intermediate Algebra (2 yr. career)	
	or	3
MTH 104	College Algebra & Trigonometry II (4 yr. transfer)	
PED	Fitness & Lifetime Sports	1
		18

THIRD SEMESTER		Credits
AMT 630	Power Train and Accessory Service (8 weeks)	6
AMT 631	Engine Systems Service (8 weeks)	6
ENL 201	Technical Writing	3
MGT 247	Small Business Management	3
		18

FOURTH SEMESTER		Credits
AMT 640	Chassis Systems Service (8 weeks)	6
	Automotive Service Elective*	6
PHS 500	Physics Survey (2 yr. career)	
	or	3/4
PHS 100	Physics Mechanics (4 yr. transfer)	
PED	Fitness & Lifetime Sports	1
		16/17

Mathematics/Science Sequence

Career

MTH 500	Technical Math
MTH 105	Intermediate Algebra
PHS 500	Physics Survey

Transfer

MTH 103	College Algebra & Trigonometry I
MTH 104	College Algebra & Trigonometry II
PHS 100	Physics Mechanics

It is suggested all math deficiencies (as identified on the College's placement exams) be made up prior to enrollment due to the course load and technical nature of the program.

*Automotive Service Elective - Depending on student interest and enrollment, a minimum of one and a maximum of two of the following courses will be offered during a given semester.

AMT 641	Automatic Transmissions and Air Conditioning Service (8 weeks)
AMT 642	Engine and Electrical Overhaul (8 weeks)
AMT 643	Wheel Alignment and Advanced Chassis Service (8 weeks)

Co-op Options:
Alternating
Parallel
Summer

PROGRAM OBJECTIVES

The goal of this program is to prepare students for jobs in the automotive field. The program also prepares students to take written certification exams—for example, the National Institute for Automotive Service Excellence exam and the Pennsylvania Vehicle Safety Inspection exams, written and practical—for certification as vehicle safety inspectors.

A graduate of Automotive Technology should be able to:

1. diagnose and repair common malfunctions of systems and components on popular makes of automobiles.
2. diagnose and repair malfunctions and wear in one of the following specialized automotive service areas:
   a. engines
   b. automatic transmissions and air conditioning
   c. alignment and suspension
3. apply basic laws of physics and scientific principles to automotive systems and components when diagnosing problems and in product development.
4. record engineering data in mathematical terms and solve basic problems using technical mathematics, elementary algebra, and trigonometry.
5. interpret engineering data presented in graphs or charts, algebraic expressions, or proportional relationships.
6. create and interpret basic engineering drawings.
7. demonstrate knowledge of good management practices, including personnel, equipment, shop layout, and customer relations, in the automotive service shop.
8. maintain automotive service records, dealership warranty procedures, and customer files.
9. demonstrate skill in basic verbal communications and the ability to speak logically; use various types of verbal communication skills in sales and service and in developing leadership skills.
10. write clear, concise, and accurate repair orders, technical reports, service advertising copy, business memoranda, and business letters.
11. maintain business records, explain the factors to be considered in starting a new business, and state good management practices.
12. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.
13. demonstrate a responsible attitude toward the automotive service and manufacturing industry and the world of work.

new, more current

AVIATION MAINTENANCE TECHNICIAN (AC)

Certificate/2 years

This program prepares students for employment as aircraft and powerplant maintenance technicians. Students develop practical skills in aircraft powerplant maintenance and troubleshooting. The program also covers powerplant and maintenance theory. This program is approved by the Federal Aviation Administration, and as a graduate the student will be qualified to take the examinations for the Airframe and Powerplant Maintenance Certificate.

Types of Jobs: Maintenance technician for airlines, fixed base operators, and manufacturer's services.

FIRST SEMESTER		Credits
APC 513	Basic Electricity	3
APC 514	Fedeal Air Regulations	2
APC 515	Material and Processes	3
APC 516	Aircraft Servicing/Fluid Liners and Fittings	3
APC 517	Weight and Balance/Physics	2
APC 518	Turbine Engines	3
MTH 515	General Aviation Math	3
		19

SECOND SEMESTER		Credits
APC 522	Engine Ignition Systems	3
APC 523	Engine Induction and Exhaust Systems	2
APC 524	Engine Fuel Systems	3
APC 525	Propellers	3
APC 526	Reciprocating Engines and Engine Inspection	7
EDT 104	Aircraft Drawing	2
		20

THIRD SEMESTER		Credits
APC 633	Engine Cooling and Lubricating	4
APC 634	Engine Fire Protection and Instruments	2
APC 635	Engine Electrical	3
APC 636	Aircraft Electrical	4
APC 637	Aircraft Covering, Finishes and Welding	3
APC 638	Aircraft Assembly and Rigging/Inspection	3
		19

FOURTH SEMESTER		Credits
APC 642	Aircraft Sheet Metal and Wood Structures	6
APC 643	Aircraft Landing Gear, Hydraulics Pneumatics, and Position/Warning	6
APC 644	Aircraft Communications/Navigation and Instruments	2
APC 645	Aircraft Atmosphere Control and Ice/Rain Control	3
APC 646	Aircraft Fuel and Fire Protection	2
		19

PROGRAM OBJECTIVES

The objective of the Aviation Maintenance Technician program is to prepare students to take the written, oral, and practical Federal Aviation Administration (F.A.A.) Examination. Students master the skills needed for aviation maintenance jobs.

A graduate of the Aviation Maintenance Technician program should be able to:

1. prepare F.A.A. maintenance forms accurately.
2. locate specific information in various aviation publications.
3. read and understand aircraft and powerplant service publications.
4. recognize the need for accuracy and thoroughness in work.
5. demonstrate professional skills in inspection, maintenance and repair.
6. observe and practice safety habits at all times.
7. demonstrate correct use of basic hand tools, special tools, and required testing equipment.
8. use mathematics and theory in aviation maintenance work.
9. list, define, and correctly use aviation maintenance terminology.
10. maintain high professional standards—as established by the F.A.A. and studied in the program—in aviation maintenance work.

AVIATION TECHNOLOGY (AD)

Associate Degree/2 years

This program prepares students for employment and advancement in aviation maintenance. Students develop practical skills in airframe and powerplant. Academic courses—in English and mathematics as well as in aviation—help students to understand the theoretical aspects of aviation maintenance.

As graduates students will be qualified to take the examination for the Airframe and Powerplant, F.A.A. (Federal Aviation Administration) Certificate.

Types of Jobs: Employment as maintenance technicians for airlines or fixed base operators. After several years of experience, graduates with this educational background may advance to positions as shop supervisors, aircraft salespersons, manufacturer service representatives, or engineering assistants in research and development.

Recommended High School Subjects: Three years of English and two years of high school algebra. A student cannot enter this program with any reading or math deficiencies because of the technical aspects of the program.

FIRST SEMESTER		Credits
APC 513	Basic Electricity	3
APC 514	Federal Air Regulations	2
APC 515	Material and Processes	3
APC 516	Aircraft Servicing/Fluid Liners and Fittings	3
APC 517	Weight and Balance/Physics	2
APC 518	Turbine Engines	3
MTH 515	General Aviation Math	3
		19

SECOND SEMESTER		Credits
APC 522	Engine Ignition Systems	3
APC 523	Engine Induction and Exhaust Systems	2
APC 524	Engine Fuel Systems	3
APC 525	Propellers	3
APC 526	Reciprocating Engines and Engine Inspection	7
EDT 104	Aircraft Drawing	2
		20

SUMMER SESSION I		Credits
ENL 111	English Composition I	3
MTH 103	College Algebra & Trigonometry I	3
PED	Fitness & Lifetime Sports	1
		7

SUMMER SESSION II		Credits
ENL 121	English Composition II or	3
ENL 201	Technical Writing	
PED	Fitness & Lifetime Sports	1
	Elective*	3/4
		7/8

THIRD SEMESTER		Credits
APC 633	Engine Cooling and Lubricating	4
APC 634	Engine Fire Protection and Instruments	2
APC 635	Engine Electrical	3
APC 636	Aircraft Electrical	4
APC 637	Aircraft Covering, Finishes and Welding	3
APC 638	Aircraft Assembly and Rigging/Inspection	3
		19

FOURTH SEMESTER		Credits
APC 642	Aircraft Sheet Metal and Wood Structures	6
APC 643	Aircraft Landing Gear, Hydraulics, Pneumatics, and Position/Warning	6
APC 644	Aircraft Communications/Navigation and Instruments	2
APC 645	Aircraft Atmosphere Control and Ice/Rain Control	3
APC 646	Aircraft Fuel and Fire Protection	2
		19

*MGT 110 Principles of Business or
PHS 100 Physics Mechanics are suggested.

All deficiencies (as identified in the College's placement exams) must be made up prior to enrolling in the Aviation programs.

PROGRAM OBJECTIVES

The major objectives of the Aviation degree program are: (1) to prepare students to pass the written, oral and practical Federal Aviation Administration (F.A.A.) Examination for the Airframe and Powerplant Maintenance Certificate; (2) to train students in the skills needed for jobs in aircraft maintenance; (3) to provide knowledge needed for supervisory and technical jobs.

A graduate of the Aviation Technology degree program should be able to:

1. prepare F.A.A. maintenance forms accurately.
2. locate specific information in various aviation publications and be able to interpret and apply the information.
3. read and understand aircraft and powerplant service publications.
4. recognize the need for accuracy and thoroughness—as defined by the F.A.A.—in work.
5. demonstrate standard inspection procedures and maintenance and repair skills following F.A.A. guidelines.
6. demonstrate and practice safety habits at all times.
7. demonstrate correct use of basic hand tools, special tools, and required testing equipment.
8. use mathematics, blueprints, diagrams, and theory in aviation maintenance work.
9. list, define, and correctly use aviation maintenance terminology.
10. maintain high professional standards—as established by the F.A.A., the aviation industry, and through program instruction—in aviation maintenance and in dealing with the public.
11. demonstrate clear, concise writing ability in composing letters, shop orders, and technical reports.
12. evaluate consumer needs and relate them to current business procedures in aviation maintenance.
13. use current decision-making techniques and demonstrate the potential for managerial growth.
14. identify the need for physical fitness and positive leisure activities.

BROADCASTING (BR)

Associate Degree/2 years

This program prepares students for entry-level jobs in broadcasting, and for work in related fields such as public relations. Practical courses in broadcasting and mass communications are combined with courses in the liberal arts to provide a well-rounded program. Courses include announcing, broadcast writing, radio station operation and management, law and ethics, public relations and media management. The program also provides essential related coursework in English, government, the social sciences, business, and math or science.

Types of Jobs: Radio or television announcer, disc jockey, news commentator, public relations assistant, advertising copywriter.

FIRST SEMESTER		Credits
MCM 111	Introduction to Mass Communications	3
BRC 114	Audio in Media	3
JOU 111	Newswriting	3
SEC 509	Typewriting or passing score on typing exam	1
ENL 111	English Composition I	3
ENL 202	Fundamentals of Speech	3
		16

SECOND SEMESTER		Credits
BRC 126	Introduction to Radio Station Operation	2
BRC 233	Announcing Techniques	3
MCM 122	Media and the Law	3
PSC 241	State and Local Government	3
PSY 111	General Psychology	
	or	3
SOC 111	Introduction to Sociology	
	or	
MGT 235	Business Psychology	
ENL 121	English Composition II	3
		17

THIRD SEMESTER		Credits
BRC 223	Broadcast Writing	3
BRC 236	Radio Station Operation and Management	2
ECO 201	Principles of Economics	
	or	3
MGT 110	Principles of Business	
PSC 231	American Government-National	3
PED	Fitness & Lifetime Sports	1
	Elective - Math or Science*	3
		15

FOURTH SEMESTER		Credits
BRC 240	Station Management Practicum**	
	or	3
MGT 247	Small Business Management	
MCM 242	Media Management & Community Responsibility	3
MCM 243	Public Relations	3
ADV 101	Advertising	3
PED	Fitness & Lifetime Sports	1
	Elective***	3
		16

*100 or 200-level course in biology, chemistry, environmental science, geography, geology, mathematics or physics.

**Cooperative Education experience approved by the Division Director may be substituted.

***Elective may be any 100 or 200-level course.
Suggested Electives:
-ENL 201
PSY 111, SOC 111, MGT 235, ECO 201, MGT 110, BRC 242, or MGT 247 if not used to meet specific requirements in the first and second semesters.

PROGRAM OBJECTIVES

The general objective of the Broadcasting program is to prepare students for positions in small to medium-size operations in radio broadcasting and related mass communication industries. Students are also prepared for transfer to baccalaureate degree programs.

Graduates of the Broadcasting program will be able to:

1. evaluate their role as individual citizens in a community as well as their unique importance as trained mass media persons with the potential to influence the lives of others in the community.
2. analyze the responsibilities of the mass media in the United States.
3. state ethical canons and governmental regulations or laws which govern the production of mass media; correlate personal responsibility and those laws and canons.
4. distinguish the philosophical and practical standards and goals of various forms of mass media.
5. explain examples of the impact of mass media upon the history of the United States and upon society.
6. interview, research, and otherwise gather information needed to write and produce specialized material—including news, features, reviews, interviews, commercial announcements, public service announcements, and public relations news releases and sound clips—for dissemination through electronic or print media.
7. demonstrate proficiency in selecting and announcing music from recorded material and arrange musical selections in a logical program form using several types of recorded musical styles.
8. demonstrate proficiency in the use of the tools of audio production, including control room boards, mixing boards, microphones, tape machines, turntables, telephone coupling equipment, editing equipment, and various types of tapes.
9. demonstrate effective performance in various types of announcing for mass media, including news, interviews, features, sports, talk shows, commercial announcements and public service announcements.
10. demonstrate mass media-related employee and management skills which reflect effective basic business principles.
11. demonstrate the ability to acquire and process demographic information on a small to medium-sized market, and design a mass media plan to serve the particular needs of that market.
12. evaluate the nature of advertising in the United States as it relates to the national economy and create usable advertising for the mass media.
13. interview community leaders on local community needs and prepare a community needs assessment study as outlined by FCC regulations.
14. demonstrate proficiency in job seeking, including the preparation of effective letters of application, resumes and audition tapes.
15. apply skills in writing, market analysis, communications, and in developing specified outcome plans to related fields such as public relations.

BUILDING CONSTRUCTION TECHNOLOGY (CB)

Associate Degree/2 years

This program covers the theoretical and practical aspects of light building construction. Students learn the principles and techniques of light-frame carpentry and masonry. The program emphasizes design, construction, cost estimation, and management.

Types of Jobs: Positions leading to supervisor, contractor, construction technician, or construction superintendent. (In addition to the associate degree, these jobs require suitable job experience.)

Recommended High School Subjects: Two years of algebra, one year of science. One year of geometry is desirable.

FIRST SEMESTER		Credits
BCT 110	Site Preparation and Layout	2
BCT 114	Wood Construction I	5
BCT 115	Construction Materials	2
ENL 111	English Composition I	3
MTH 103	College Algebra & Trigonometry I	3
PED	Fitness & Lifetime Sports	1
		16

SECOND SEMESTER		Credits
BCT 120	Blueprints, Specifications and Codes	2
BCT 125	Wood Construction II	5
ARC 102	Basic Architectural Drafting	3
ENL 201	Technical Writing	3
MTH 104	College Algebra & Trigonometry II	3
PED	Fitness & Lifetime Sports	1
		17

THIRD SEMESTER		Credits
BCT 230	Commercial Construction I	2
BCT 233	Masonry Construction I	5
BCT 238	Concrete Construction	3
ECO 201	Principles of Economics	3
PHS 100	Physics-Mechanics	4
		17

FOURTH SEMESTER		Credits
BCT 240	Commercial Construction II	2
BCT 244	Construction Estimating and Management	2
BCT 245	Practical Construction Experience	3
BCT 246	Masonry Construction II	4
CSC 102	Introduction to Microcomputers	3
		14

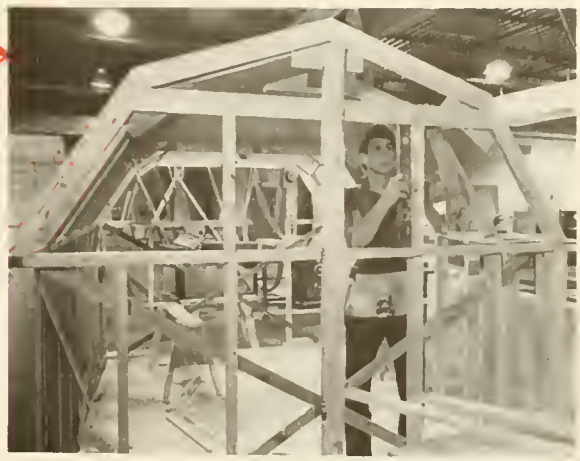
Co-op Options:
- Alternating
- Parallel
- Summer

PROGRAM OBJECTIVES

The general objectives of this program are to prepare graduates for employment in the residential and commercial construction industry.

A graduate of the Building Construction Technology program should be able to:

1. write clear, concise, legible, and accurate technical reports and use verbal communication skills in job-related activities.
2. demonstrate the basic manipulative skills needed to lay out and plan work.



3. interpret and prepare plans, drawings, specifications, lines, symbols, and abbreviations on working drawings or blueprints.
4. demonstrate the ability to lay out and erect residential and commercial structures.
5. analyze specifications and contract drawings; make accurate quantity take-offs and labor estimations to develop an estimated construction cost for a building project.
6. demonstrate basic knowledge and skills in masonry and concrete construction.
7. describe various types of materials and methods used in the construction trade.
8. describe the organization, financing, labor relations, selling, pricing, customer service, management, and other aspects of business.
9. describe the complexity of the building construction industry, the relationships among the various trades; methods of communication and coordination among all trades and professions in the industry.
10. solve building construction problems using algebra and trigonometry.
11. apply scientific procedures learned in physics to construction problems.
12. apply technical and basic skills on practical residential and commercial construction projects.
13. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.

BUSINESS MANAGEMENT (BM)

Associate Degree/2 years

This program provides basic business knowledge. It covers management theory and application, business concepts, and the effect of business on the economy.

Types of Jobs: Junior-executive or management trainee positions in manufacturing, retailing, finance, banking, insurance, marketing, and government.

FIRST SEMESTER		Credits
MGT 110	Principles of Business*	3
MGT 111	Business Mathematics	3
ACC 112	Accounting I*	3
SEC 111	Typewriting I	3
ENL 111	English Composition I	3
PED	Fitness & Lifetime Sports	1
		16

SECOND SEMESTER		Credits
MGT 230	Business Communications	3
ACC 122	Accounting II	3
CSC 118	Fundamentals of Computer Science*	3
ECO 201	Principles of Economics*	3
PED	Fitness & Lifetime Sports	1
	Elective-Social Science/Humanities	3
		16

THIRD SEMESTER		Credits
MGT 231	8usiness Law I*	3
ACC 230	Managerial Accounting	3
ENL 202	Fundamentals of Speech	3
	Elective-Computer Science*	3
	Elective*	3
		15

FOURTH SEMESTER		Credits
MGT 125	Finance*	3
MGT 241	Business Law II	3
MGT 248	Supervision and Human Relations	3
MKT 240	Marketing	3
	Elective*	3
		15

*Equivalent AIB (American Institute of Banking) courses may be substituted with Division approval.

Co-op Options:
Parallel
Summer

EVENING PROGRAM

Courses required for the associate degree in Business Management are also offered in the evenings and on weekends for the convenience of students who are unable to attend weekday classes. Students may complete all courses required for a degree in Business Management by enrolling in evening and wekend courses on a part-time basis. Part-time students may require more than two years to complete the program.

PROGRAM OBJECTIVES

The general objective of this program is to prepare the student for employment in business management. The program will also upgrade the skills of those now employed in this field.

The graduate should be able to:

1. demonstrate specialized knowledge and skills needed for employment in business management.
2. demonstrate potential for managerial growth and the ability to use the tools of modern decision making.
3. demonstrate knowledge of profit motives.
4. apply generally accepted accounting principles.
5. identify, compare, and use financial statements and management information systems.
6. evaluate consumer needs, and relate them to current business procedures.
7. relate in a positive manner to supervisors, peers, and subordinates.
8. apply knowledge of computer technology systems in making managerial decisions.
9. demonstrate skills in effective verbal and written communication.
10. identify the laws affecting business.
11. identify the need for physical fitness and positive leisure activities.

CIVIL ENGINEERING TECHNOLOGY (CT)

Associate Degree/2 years

This program trains students in the skills needed to assist civil engineers in planning, designing and building highways, railroads, bridges, airfields, buildings, and dams. Experience with modern equipment prepares students to meet the challenge of recent technical developments.

Types of Jobs: Engineering technician, surveyor, inspector, draftsperson, cartographer, design technician, photogrammetrist, construction manager.
Recommended High School Subjects: Two years of algebra, one year of science.

FIRST SEMESTER		Credits
CET 111	Materials of Construction	2
CET 112	Engineering Drawing	3
CET 113	Introductory Surveying	2
ENL 111	English Composition I	3
MTH 103	College Algebra & Trigonometry I	
	or	3/4
MTH 238	Calculus I	
PED	Fitness & Lifetime Sports	1
	Elective-Humanities/Social Science	3
		17/18

SECOND SEMESTER		Credits
CET 121	Plane Surveying	4
CET 122	Topographic Drawing & Cartography	3
CET 244	Photogrammetry	3
ENL 121	English Composition II	
	or	3
ENL 201	Technical Writing	
MTH 104	College Algebra & Trigonometry II	
	or	3/4
MTH 248	Calculus II	
PED	Fitness & Lifetime Sports	1
		17/18

THIRD SEMESTER		Credits
CET 231	Route Surveying	4
CET 232	Origin, Distribution & Behavior of Soils	3
CET 233	Statics	3
CET 234	Highway Engineering Technology	3
PHS 115	College Physics I	
	or	4
PHS 116	General Physics I	
		17

FOURTH SEMESTER		Credits
CET 245	Advanced Surveying	
	or	2
	Approved Co-op	
CET 242	Fluid Mechanics	3
CET 243	Strength of Materials	3
CSC 103	Introduction to Computers with FORTRAN	3
PHS 125	College Physics II	
	or	4
PHS 126	General Physics II	
MTH 201	Elementary Statistics I	
	or	3
MTH 107	Applied Calculus*	
		18

*Students who have completed MTH 238 and MTH 248 may not schedule MTH 107.

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the Civil Engineering Technology program is to prepare students for technical-level positions in the field of civil engineering. The program also provides an overview of the field and prepares students for advanced study.

A graduate of the Civil Engineering Technology program should be able to:

1. distinguish between various types of surveys and select and use the proper instruments and methods for each type of survey. These will include boundary, control, construction, topographic and geodetic surveys.
2. construct a cartographic and topographic map using recognized mapping procedures.
3. use aerial photographs in making engineering measurements and topographic maps.
4. apply basic criteria used to design and locate highways and estimate earthwork quantities for highway construction.
5. determine and use the engineering properties of the basic construction materials such as steel, concrete, wood, and soil.
6. understand the functions of basic structural components and be able to design these components to resist applied loads.
7. demonstrate a working knowledge of the mechanics of compressible and incompressible fluid flow and their applications in piping systems, pumps, open channels, and reservoirs.
8. communicate effectively through the skills learned in English Composition and Engineering Drawing.
9. use social science concepts for a better understanding of himself or herself and to relate more effectively to others.
10. use algebra and trigonometry to solve problems related to civil engineering.
11. apply scientific procedures learned in physics in solving engineering problems.
12. recognize the need for physical fitness and lifelong recreational activities through physical education.
13. prepare the computer programs needed to solve engineering problems.
14. demonstrate fundamental skills and knowledge in the use of computer-aided drafting (CAD) and perform basic drawing functions on computer-aided equipment.

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CLERICAL STUDIES (BT)

Certificate/1 year
(Starts in January of each year)

Clerical Studies emphasizes basic office skills. You will learn the fundamentals of typing, microcomputer operation, business machine calculation, and office procedures—filing, processing mail, reception work, and office communications. The program also gives students the chance to develop skills in word processing, machine transcription, microtranscription, and payroll procedures.

Types of Jobs: Clerk-typist, receptionist, word processor, filing, general clerical, payroll work, machine transcription.

FIRST SEMESTER		Credits
SEC 111	Typewriting I	3
CLS 718	Clerical Office Procedures	5
CSC 104	Microcomputer Fundamentals	1
MGT 230	Business Communications	3
ENL 111	English Composition I	3
		15

SECOND SEMESTER		Credits
CLS 726	Microtranscription	3
CLS 729	Clerical Office Workshop	3
SEC 121	Typewriting II	3
MGT 111	Business Mathematics	3
WDP 121	Word Processing I	3
		15

PROGRAM OBJECTIVES

The general objective of the Clerical Studies program is to prepare students for employment in entry-level office positions.

The graduate should be able to:

1. demonstrate skills in performing routine office tasks.
2. write and speak clearly and effectively.
3. perform basic clerical office procedures.
4. demonstrate basic knowledge of modern office equipment and office supplies.
5. apply working knowledge of microcomputers.
6. apply working knowledge of duplicating and other copying methods, word processing, and computational skills.
7. assess and influence behavior among supervisors, peers, and subordinates.
8. apply general knowledge of the social sciences, and understand their effect on our society.

COMPUTER OPERATIONS TECHNOLOGY (CO)

Certificate/1 year

Computer Operations Technology offers students the background and skills necessary to acquire entry level positions in a data processing center. In addition, the student will acquire microcomputer operation and application skills as well as general office related procedures and techniques. The program emphasizes current terminology, computer related and personal skills, and provides hands-on training through an internship in the second semester.

Types of Jobs: Entry-level computer operator, data entry clerk, microcomputer operator, office technician. With experience, graduates could advance to operations managers, data or job control managers, and technical sales representatives.

get new model

FIRST SEMESTER		Credits
CSC 118	Fundamenals of Computer Science	3
ACC 112	Accounting I	3
SEC 105	Keyboarding	1
ENL 111	English Composition I	3
CSC 102	Introduction to Microcomputers	3
CSC 109	Computer Operations I	3
		16

SECOND SEMESTER		Credits
ENT 105	Microcomputer Maintenance	1
CSC 120	Business Computer Applications	3
CSC 128	COBOL Programming I	3
MGT 230	Business Communications	3
CSC 130	Computer Operations II	3
CSC 131	Computer Operations Internship*	1
	Elective	3
		17

*A cooperative education experience may be substituted for Computer Operations Internship.

PROGRAM OBJECTIVES

The general objective of the Computer Operations Technology program is to prepare the student for an entry-level position in a data processing computer center, a microcomputer oriented environment, or as a general office technician.

The graduate should be able to:

1. operate mainframe, mini- and micro-computer systems.
2. use system software.
3. interpret and manage data controls from data entry to completed output.
4. maintain operation logs and libraries.
5. apply job control or procedural language to perform computer jobs.
6. use and understand current terminology.
7. demonstrate skills in technical writing.
8. compose effective written and oral communications.
9. relate in a positive manner to supervisors, peers, and subordinates.
10. interpret and use written documentation for program execution.
11. perform routine housekeeping tasks in the computer area and general maintenance on the equipment.
12. demonstrate adequate keyboarding skills.
13. utilize popular applications software packages.
14. use recovery techniques for hardware or software errors.
15. operate peripheral and other data processing equipment.

COMPUTER INFORMATION SYSTEMS (CS)

Associate Degree/2 years

Computer Information Systems offers students the background and skills needed to enter this fast-growing field. The program offers a strong background in commonly used programming languages, including PASCAL and COBOL. Students may also elect other languages—RPG, BASIC, Advanced Assembler and FORTRAN. The program includes a major emphasis in systems analysis, file processing, data structures and data base processing.

Types of Jobs: Entry-level application programming. With experience graduates could advance to positions in systems analysis, systems design, programming and systems project leadership and management, data processing and information systems management, and general management.
Recommended High School Subjects: Two units of math, including algebra.

FIRST SEMESTER		Credits
ACC 112	Accounting I	3
CSC 112	Programming In PASCAL	3
CSC 118	Fundamentals of Computer Science	3
ENL 111	English Composition I	3
MTH 101	Introduction to Mathematics I*	
	or	3
MTH 103	College Algebra & Trigonometry I	
SEC 509	Typewriting	1
PED	Fitness & Lifetime Sports	1
		17

SECOND SEMESTER		Credits
CSC 125	Data and Information Structures	3
CSC 128	COBOL Programming I	3
ENL	English Requirement**	3
MTH 102	Introduction to Mathematics II*	
	or	3
MTH 104	College Algebra & Trigonometry II	
PED	Fitness & Lifetime Sports	1
	Elective - Math/Science/Business	3/4
		16/17

THIRD SEMESTER		Credits
CSC 230	Computer Systems with Assembler	3
CSC 235	Systems Analysis and Design Methods	3
CSC 238	COBOL Programming II	3
	Elective - Computer Science***	3
	Elective - Math/Science/Business	3/4
		15/16

FOURTH SEMESTER		Credits
CSC 240	File and Database Processing	3
CSC 248	Applied Software Development	3
	Elective - Computer Science***	3
	Elective - Math/Science/Business	3/4
	Elective - Social Science/Humanities	3
		15/16

*Must complete MTH 101 - 102 or MTH 103 - 104 sequence.

**Either ENL 121 - English Composition II, ENL 201 - Technical Writing, or ENL 202 - Fundamentals of Speech.

***Computer Science Electives:
CSC 231 Programming in RPG
CSC 232 Programming in BASIC
CSC 239 FORTRAN with Plotting
CSC 244 Advanced Assembly Language

EVENING PROGRAM

Courses required for the associate degree in Computer Information Systems are also offered in the evenings and on weekends for the convenience of students who are unable to attend weekday classes. Students may complete all courses required for a degree in Computer Information Systems by enrolling in evening and weekend courses on a part-time basis. Part-time students may require more than two years to complete the program.

PROGRAM OBJECTIVES

The general objective of Computer Information Systems is to prepare students for jobs as computer programmers or junior systems analysts. As an alternative, graduates may pursue advanced degrees. The program will also upgrade the skills of those employed in the field.

The graduate should be able to:

1. write effective, efficient computer programs in PASCAL, COBOL, BASIC and Assembler langauges.
2. demonstrate ability to reason logically, to analyze, to synthesize, and to evaluate technical information and to apply these processes.
3. demonstrate skills in verbal and written communications.
4. relate in a positive manner to supervisors, peers, and subordinates.
5. use structured programming techniques.
6. prepare written documentation of computer programs.
7. assist in the design of business systems.
8. use system software packages to execute computer jobs.
9. identify the concepts and organization of various operating systems.
10. design and incorporate data controls from data entry to completed output.
11. use interactive programming techniques.
12. perform basic operations on a computer system and related data processing equipment.
13. apply generally accepted accounting and mathematical principles.
14. apply general knowledge of the social sciences.
15. identify the need for physical fitness and positive leisure activities.

CONSTRUCTION CARPENTRY (CC)

Certificate/2 years

This program provides training in carpentry and masonry skills. Students develop skills in the correct use of hand tools, portable power tools and portable power equipment; they also become licensed in the use of power activated tools. The program includes classroom instruction in construction methods, procedures and materials. Students gain experience through working on on-campus and off-campus construction projects under the supervision of qualified instructors. Prior to beginning the third semester students will select either the carpentry or home remodeling option for specialization in advanced courses.

Types of Jobs: Apprentice carpenters or masons, with advancement possibilities; employment in plants or factories where building units, components, or building materials are made or sold.

FIRST SEMESTER		Credits
BCT 110	Site Preparation and Layout	2
BCT 114	Wood Construction I	5
BCT 233	Masonry Construction I	5
MTH 710	Technical Mathematics	3
		15

SECOND SEMESTER		Credits
BCT 120	Blueprints, Specifications and Codes	2
BCT 125	Wood Construction II	5
BCT 246	Masonry Construction II	4
ARC 102	Basic Architectural Drafting	3
ENL 711	Communications	3
		17

CARPENTRY OPTION

THIRD SEMESTER		Credits
BCT 230	Commercial Construction I	2
BCT 235	Wood Construction III	5
BCT 236	Interior Finish Materials	4
BCT 238	Concrete Construction	3
	Elective	3
		17

FOURTH SEMESTER		Credits
BCT 240	Commercial Construction II	2
BCT 244	Construction Estimating & Management	2
BCT 245	Practical Construction Experience	3
BCT 247	Wood Construction IV	5
	Elective	3
		15

HOME REMODELING OPTION

THIRD SEMESTER		Credits
BCT 235	Wood Construction III	5
BCT 236	Interior Finish Materials	4
BCT 237	Home Remodeling I	2
PLH 254	Plumbing for the Trades	2
	Elective	3
		16

FOURTH SEMESTER		Credits
BCT 244	Construction Estimating & Management	2
BCT 245	Practical Construction Experience	3
BCT 247	Wood Construction IV	5
BCT 248	Home Remodeling II	4
ELT 110	Electricity for the Trades	3
		17

PROGRAM OBJECTIVES

The major emphasis of this program is to provide basic skills and knowledge in the building construction industry.

A graduate of the Construction Carpentry program should be able to:

1. demonstrate basic knowledge and skills in the use of the builder's level-transit and other measuring devices for site preparation and building layout.
2. demonstrate basic knowledge and skills in masonry and concrete construction.
3. demonstrate basic knowledge and skills in the layout and construction of residential and commercial structures.
4. demonstrate basic knowledge and skills in the installation of exterior siding, roofing, trim and millwork, and building insulation.
5. demonstrate basic knowledge and skills in the installation of interior finish, floors, walls and ceilings.
6. demonstrate basic knowledge and skills in the installation of doors and interior trim; build and/or install cabinet work and finish stairways.
7. demonstrate basic knowledge of the trades related to the building industry—for example, ceramic tile and resilient floor installations.
8. look for, secure, and keep a job; understand the factors involved in self-employment and the importance of customer service; develop and work toward personal goals.
9. read and interpret blueprints and specifications.
10. demonstrate and apply construction estimating and project management skills.
11. apply carpentry and masonry skills to home remodeling projects.
12. use the basic skills of verbal and written communication needed to understand instructions and present ideas and instructions in a clear and logical manner.
13. use the basic math skills required on the job and needed to develop visualization skills and logical thought processes.
14. practice safe work habits, demonstrate responsible attitudes, and produce high quality work.

CULINARY ARTS (CA)

Certificate/2 years

This program prepares students in fine product preparation and presentation. Extensive practical experience with a variety of cuisines and techniques are available through hands-on instruction.

Types of Jobs: Entry level chef positions, cook, sous chef, banquet cook, preparation chef, line cook (broiler, saute, fry), garde manger station and pastry chef.

FIRST SEMESTER		Credits
FHD 111	Introductory Foods	3
FHD 112	Nutrition	3
FHD 115	Purchasing, Storage & Sanitation	3
FHD 110	Dining Room Management	3
MTH 101	Introduction to Mathematics I	3
		15

SECOND SEMESTER		Credits
FHD 121	Quantity Food Production	3
FHD 125	Menu Planning & Cost Control	3
FHD 127	Fundamentals of Baking	4
FHD 128	Cafeteria Production & Service	1
FHD 232	Introduction to Garde Manger	3
ENL 111	English Composition I	3
		17

PRACTICUM - SUMMER TERM		
FHD 250	Hospitality, Dietetic Work Experience	1

THIRD SEMESTER		Credits
FHD 237	Advanced Quantity & Ala Carte	4
FHD 245	Equipment and Layouts	3
FHD 238	Breakfast & Brunch Preparation	3
FHD 239	Cake Decorating I	1
FHD 240	Chocolate Work	1
CSC 102	Introduction to Microcomputers	3
		15

FOURTH SEMESTER		Credits
FHD 129	Beverage Management	3
FHD 260	Restaurant Business & Law	3
FHD 261	Advanced Garde Manger and Buffet Catering	3
FHD 262	Ice Carving	1
FHD 263	Classical Cuisine	3
	Elective	1/3
		14/16

PROGRAM OBJECTIVES

The general objective of the Food & Hospitality/Culinary Arts program is to prepare students to serve in entry level chef/cook positions. Upon completion of the program, the student should be able to:

1. demonstrate proper techniques of food preparation and food handling sanitation.
2. develop menu planning, purchasing, portion control, and patient tray and cafeteria service.
3. describe the equipment available on the market and plan its arrangement, operation, and maintenance for efficiency and safety.
4. conform to professional standards in personal appearance and demonstrate appropriate attitudes.
5. describe the physiological effects of food in the human body.
6. demonstrate a responsible attitude toward the food service profession and the community.
7. communicate clearly, both verbally and in writing.
8. plan and cater events; apply knowledge of all types of beverages.
9. demonstrate working knowledge of front office practice.
10. demonstrate skill in classical cuisine, baking and advanced baking techniques.
11. apply and produce menus utilizing new trends in cuisine - nouvelle, regional and spa cuisine.
12. demonstrate display techniques as they apply to hot and cold buffet presentations.
13. utilize appropriate skills of garde manger.
14. utilize the art of ice, butter, and chocolate carving in culinary presentation.

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DAIRY HERD MANAGEMENT (DY)
Certificate/1 year

The Dairy Herd Management program provides training in the skills needed to successfully manage and operate a dairy farm. The program covers all aspects of dairy farm management – from soil preparation and feed crop production to milk processing. Dairy farm management – accounting and decision making – are included. Whether students plan to return to their family farms or to work as herd managers for large dairy operations, this program offers them the necessary skills.

Types of Jobs: Dairy farm manager, dairy herds manager, farm manager (general), Dairy Herd Improvement Association field technician.

FIRST SEMESTER		Credits
DHM 711	Soils & Soil Fertility	3
DHM 712	Forage Production	3
DHM 713	Dairy Feeding and Management	3
DHM 714	Dairy Herd Health	3
MTH 710	Technical Mathematics I	3
		15

SECOND SEMESTER		Credits
DHM 721	Financing Dairy Enterprises	3
DHM 722	Milking Management	3
DHM 723	Farm Records and Analysis	3
DHM 724	Animal Breeding and Reproduction	3
DHM 725	Replacement Stock Management	3
ENL 711	Communications	3
		18

PROGRAM OBJECTIVES

The objective of this program is to train students in the skills needed to successfully manage and operate a dairy farm. The program emphasizes the practical aspects of dairy farm operation.

A graduate of Dairy Herd Management should be able to:

1. analyze and work with soil – check soil conditions, select and apply the correct fertilizer, cultivate soil, calculate fertilitzer formulas – and plan crops for dairy forage production.
2. understand financial institutions and programs as they relate to agriculture and apply the necessary financial principles.
3. develop dairy herd feeding programs which meet nutritional requirements for milk production, herd reproduction, maintenance and growth – based on knowledge of forage analysis, feed handling, and feed storage facilities.
4. apply health standards and sanitary milking procedures – with an emphasis on preventing herd health problems – and maintain milking equipment and facilities.
5. design a breeding and reproduction program using knowledge of sire selection, physiology related to reproduction and artificial insemination.
6. demonstrate skills in keeping farm accounts and interpret records related to the economic aspects of dairy production.
7. identify health problems of the herd which require treatment or diagnosis in order to maintain a healthy, productive herd.
8. demonstrate knowledge of the management techniques needed for success in the dairy industry.
9. demonstrate a strong work ethic.

DENTAL ASSISTING (DA)

Certificate/1 year

The Dental Assisting Program prepares students to become Certified Dental Assistants. Certified Dental Assistants serve as key members of a successful dental team. Certification allows mobility and career advances not available to the on-the-job trained dental assistant. Theoretical and intensive clinical experiences are included in the program.

Admission Requirements: All deficiencies identified during College placement tests must be remediated prior to beginning the program. Students may be required to take the DHCAT test for visual perception. All students will be interviewed and should have a "C" average in high school science classes
Types of Jobs: Certified Dental Assistants qualify for employment in any dental setting.
Recommended High School Subjects: Typing, biology.

JUNE TERM - preceding enrollment in the first semester:

		Credits
PSY 111	General Psychology	3
MTH 101	Introduction to Mathematics I	3
		6

FIRST SEMESTER		Credits
DEN 100	Introduction to Dental Assisting	5
DEN 123	Dental Radiology	3
BIO 115	Human Anatomy & Physiology I	4
DEN 102	Oral Anatomy & Histology	3
ENL 111	English Composition I	3
		18

SECOND SEMESTER		Credits
DEN 124	Dental Assisting Specialties	4
DEN 125	Pathology & Pharmacology for Dental Assistants	2
BIO 125	Human Anatomy & Physiology II	4
FHD 112	Nutrition	3
DEN 222	Dental Practice Orientation	2
		15

MAY TERM		Credits
DEN 129	Dental Assisting Practicum	2

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PROGRAM OBJECTIVES

The general objective of the Dental Assisting program is to prepare dental assistants for the certification examination as specified by the American Dental Association. The student must acquire knowledge and skills to perform the following:

1. Assist the dentist in all aspects of general dentistry applying current concepts of chairside assisting.
2. Administer basic life support procedures.
3. Assist in the management of medical and dental emergencies when indicated.
4. Provide oral health instruction including plaque control and nutritional counseling programs.
5. Maintain current and accurate patient treatment records.
6. Use effective asepsis techniques when sterilizing instruments and disinfecting equipment.
7. Expose, develop, and process dental radiographs.
8. Perform basic business office procedures including telephone management and appointment control.
9. Perform laboratory procedures associated with chairside assisting.
10. Take and record vital signs accurately.
11. Maintain the operatory, equipment, and instruments.
12. Provide oral health care utilizing the highest professional knowledge, judgment, and ability.

DENTAL HYGIENE (DH)

Associate Degree/2 years

This program offers the theoretical and clinical training needed for a variety of dental hygiene careers. The program provides a diversified background — to prepare students for licensing exams, for additional education, for jobs. Students must earn a minimum grade of "C" in each aspect of their dental hygiene courses. Failure to do so will result in termination from the program. SAT scores are required for this program — as well as a personal interview.

Types of Jobs: Hygienists are employed by dentists in private dental practices, research, government health agencies, school systems, hospital and industrial clinics, military services and in dental hygiene education programs.

Required High School Courses: Because of the strong emphasis on science in the dental hygiene program, applicants must have successfully completed one year of high school biology and two years of high school algebra. It is also recommended that the applicant have an additional laboratory science (i.e., physics, chemistry).

FIRST SEMESTER		Credits
DEN 101	Introduction to Dental Hygiene	4
DEN 102	Oral Anatomy & Histology	3
BIO 115	Human Anatomy & Physiology I	4
CHM 100	Fundamentals of Chemistry	4
FHD 112	Nutrition	3
PED	Fitness & Lifetime Sports	1
		19

SECOND SEMESTER		Credits
DEN 120	Dental Materials	2
DEN 121	Periodontics I	1
DEN 122	Clinical Dental Hygiene I	4
DEN 123	Dental Radiology	3
BIO 125	Human Anatomy & Physiology II	4
BIO 201	Microbiology	4
		18

THIRD SEMESTER		Credits
DEN 200	Clinical Dental Hygiene II	5
DEN 201	Periodontics II	1
DEN 202	General & Oral Pathology	2
DEN 203	Dental Specialties	3
DEN 204	Pharmacology	2
ENL 111	English Composition I	3
		16

FOURTH SEMESTER		Credits
DEN 220	Community Dental Health	2
DEN 221	Clincial Dental Hygiene III	4
DEN 222	Dental Practice Orientation	2
ENL 202	Fundamentals of Speech	3
PSY 111	General Psychology	3
PED	Fitness & Lifetime Sports	1
	Elective-Social Science	3
		18

PROGRAM OBJECTIVES

The general objective of the Dental Hygiene program is to prepare students to successfully pass the National Dental Hygiene Board examination, the Northeast Regional Boards, the required examinations for selected states, and to qualify for employment as dental hygienists.

The Dental Hygiene graduate should be able to:

1. apply knowledge of the design, uses, and sharpening methods of dental hygiene instruments.
2. identify anatomical landmarks of the head and neck and identify deviations from normal.
3. use correct anatomical terminology in classifying all permanent and primary teeth on the basis of morphological and histological characteristics and occlusion.
4. apply knowledge of microbiology in aseptic techniques while performing a complete and thorough prophylaxis.
5. demonstrate appropriate preventive oral health procedures
6. develop, process, and evaluate all types of intra and extra oral radiographs.
7. apply knowledge of interpersonal and motivational skills and communication techniques learned in English , speech, psychology, and social sciences when working with patients, other members of the dental health team, and community groups.
8. operate all dental equipment safely, effectively, and efficiently.
9. demonstrate a commitment to professional organizations through attending meetings, seminars, and continuing education programs.
10. apply knowledge of dental hygiene skills in a variety of settings (e.g., private practice, specialty practice, public institutions, industry, public health, etc.).
11. administer first aid and emergency treatment.
12. explain properties, dosage, actions, and reactions of drugs used in dentistry.
13. apply the concepts of anatomy, physiology, and nutrition in relating dental health to total health.
14. record all vital signs accurately and maintain accurate health histories, patient records and forms: conform to legal guidelines related to these materials.
15. develop sound ethical, philosophical, and moral professional characteristics.
16. apply concepts of chemistry in analyzing dental materials and relate them to body processes.
17. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.

new

DIESEL MECHANICS (DM)

Certificate/2 years

This program covers the theories and practical skills of diesel mechanics. Students develop the skills needed to work with diesel-powered highway vehicles, industrial and marine engines and commercial powerplants. Some specialization — in fuel injection service, engine repair and rebuilding, power train, brakes, steering, and chassis work — is available. Students may start this program in the fall, spring or summer semester. Students are required to enroll for at least one summer semester.

Types of Jobs: Heavy duty truck mechanic for truck dealership, independent garage, truck fleet, or contractor. Industrial engine mechanic in mining, quarrying, construction equipment, or marine waterways fleet. Field service representative for diesel engine manufacturer or distributor.

FIRST SEMESTER		Credits
DMC 513	Introduction to Diesel Mechanics (8 weeks)	7
DMC 514	Internal Combustion Engines (8 weeks)	7
MTH 710	Technical Mathematics I	3
		17

SECOND SEMESTER		Credits
DMC 523	Four-Cycle Diesel Engines (8 weeks)	7
DMC 524	Two-Cycle Diesel Engines (8 weeks)	7
ENL 711	Communications	3
		17

THIRD SEMESTER		Credits
DMC 533	Fuel Injection Systems I (8 weeks)	7
DMC 534	Fuel Injection Systems II (8 weeks)	7
	Optional Elective	0/3
		14/17

FOURTH SEMESTER		Credits
DMC 543	Truck Tractor Power Train (8 weeks)	7
DMC 544	Truck Tractor Chassis (8 weeks)	7
	Optional Elective	0/3
		14/17

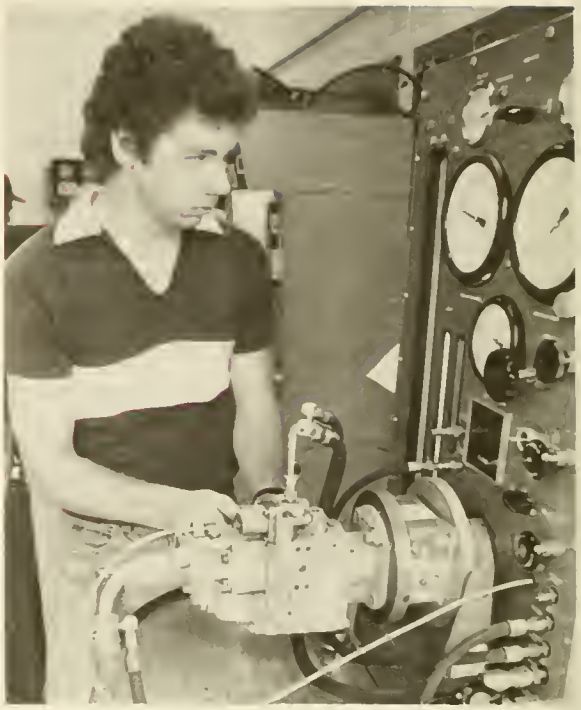
Co-op options:
Alternating
Parallel
Summer

PROGRAM OBJECTIVES

The goal of this program is to prepare students for diesel mechanic careers in transportation, construction, marine, and related fields. The program also prepares students to take the Pennsylvania Vehicle Safety Inspection exam required for certification as a vehicle safety inspection mechanic.

The graduate of Diesel Mechanics should be able to:

1. diagnose and repair common malfunctions of systems and components on popular makes of diesel engines.
2. demonstrate correct service of:
   a. diesel engines
   b. truck transmission and drive trains
   c. fuel systems, and other engine accessories
3. perform state inspections.



4. diagnose equipment failure, isolate faulty systems or components, and make necessary repairs.
5. interpret wiring diagrams, test and make repairs to starting, charging, lighting, and accessory systems on vehicles.
6. use basic math operations (addition, subtraction, multiplication, division) including decimals, fractions, and conversions in diesel mechanics work.
7. write clear, concise, and accurate abstracts and reports.
8. demonstrate safe work habits and describe their importance to the diesel industry and OSHA.
9. demonstrate a responsible attitude toward diesel service, the diesel manufacturing industry and the world of work.

DIESEL TECHNOLOGY (DD)

Associate Degree/2 years

This program covers both theory and practical skills in diesel mechanics. Hands-on work in diesel is a major component of the program. Classroom work provides a strong background in the theoretical aspects of diesel mechanics and prepares students to take the National Institute of Automotive Service Excellence Examination (NIASE) and the Pennsylvania Vehicle Safety Inspection Certification Examination. The program prepares students for work in diesel mechanics and for additional education at the baccalaureate level.

Types of Jobs: Immediate employment as maintenance technicians in the trucking industry. With several years of experience graduates may advance to such positions as shop supervisor, truck salesperson, manufacturer service representative or engineering assistant in research and development.

Recommended High School Subjects: Three years of English and two years of algebra. A student cannot enter this porgram with any reading or math deficiencies.

FIRST SEMESTER		Credits
DMC 513	Introduction to Diesel Mechanics (8 weeks)	7
DMC 514	Internal Combustion Engines (8 weeks)	7
MTH 103	College Algebra & Trigonometry I	3
PED	Fitness & Lifetime Sports	1
		18

SECOND SEMESTER		Credits
DMC 523	Four-Cycle Diesel Engines (8 weeks)	7
DMC 524	Two-Cycle Diesel Engines (8 weeks)	7
MTH	Elective*	3
		17

SUMMER SESSION		Credits
ENL 111	English Composition I	3
PHS 100	Physics-Mechanics	4
	Elective**	3
		10

THIRD SEMESTER		Credits
DMC 533	Fuel Injection Systems I (8 weeks)	7
DMC 534	Fuel Injection Systems II (8 weeks)	7
ENL 201	Technical Writing	3
		17

FOURTH SEMESTER		Credits
DMC 543	Truck Tractor Powertrain (8 weeks)	7
DMC 544	Truck Tractor Chassis (8 weeks)	7
EDT 101	Mechanical Drawing	2
PED	Fitness & Lifetime Sports	1
		17

*MTH 104 College Algebra & Trigonometry II or
MTH 201 Elementary Statistics I

**Mathematics, Science, or Business Management

PROGRAM OBJECTIVES

The major objectives of the Diesel Technology program are: 1) to prepare students for such careers as maintenance technician, shop foreperson, service writer, service representative for a manufacturer or distributor; 2) to provide the background needed for additional education; 3) to prepare students to take the Pennsylvania Vehicle Safety Inspection Certification Examination and the National Institute of Automotive Service Excellence Examinations (NIASE) in heavy duty truck mechanics; 4) to prepare students for employment at the supervisory and technical level.

A graduate of Diesel Technology should be able to:

1. diagnose and repair common malfunctions of systems and components on popular makes of diesel engines.
2. demonstrate correct service of:
   a. diesel engines
   b. truck transmissions and drive trains
   c. fuel systems and other engine accessories
3. perform vehicle safety inspections as required by state and federal laws
4. diagnose equipment failure, isolate faulty systems or components and make necessary adjustments or repairs.
5. interpret blueprints and wiring diagrams; test starting, charging, lighting and accessory systems; make adjustments and repairs to vehicles and engines; apply basic knowledge of air conditioning.
6. use mathematics, blueprints, diagrams and theory in the diesel and trucking trade.
7. write clear, concise and accurate abstracts and reports and converse intelligently with others.
8. demonstrate and practice safety habits—as required by the trade and by OSHA—at all times.
9. list, define and correctly use diesel technology terminology.
10. demonstrate the correct use of basic hand tools, special tools and required testing equipment.
11. demonstrate clear, concise writing ability in composing letters, shop orders and technical reports.
12. evaluate consumer needs and relate them to business procedures currently used in the trade.
13. demonstrate the ability to apply modern decision making techniques and the potential for managerial growth.
14. identify the need for physical fitness and positive leisure activities.

new

DIETETIC TECHNICIAN (DT)

Associate Degree/2 years

The Dietetic Technician program emphasizes food production, patient nutritional care and dietary administration in health care and other institutions. Classroom work and practical experience stress the normal and therapeutic needs of humans, food production, planning and sanitation, management skills and accounting. This program includes 450 hours of clinical experiences. (Students will need to plan for transportation to clinic sites during their second year in the program.)

Types of Jobs: Directors of dietary departments for nursing homes or school cafeterias; middle managers in hospital dietary departments. Responsibilities include supervision of production and tray service to patients. Assist dietitians in patient contact, nutritional status and care data, as well as employee supervision and training. May also be employed in middle management in commercial quantity food production.
Recommended High School Courses: One unit of high school biology or chemistry, and high school math.

FIRST SEMESTER		Credits
FHD 111	Introductory Foods	3
FHD 112	Nutrition	3
FHD 113	Field Experience in Management Systems I (2nd 8 weeks)	1
FHD 114	Introduction to Food Service Administration and Medical Care Organization	2
FHD 115	Purchasing, Storage & Sanitation	3
BIO 103	Human Anatomy & Physiology Survey	3
PED	Fitness & Lifetime Sports	1
		16

SECOND SEMESTER		Credits
FHD 121	Quantity Food Preparation	3
FHD 122	Diet Therapy with Dietetic Seminar	3
FHD 123	Field Experience in Management Systems II	3
FHD 125	Menu Planning and Cost Control	3
ENL 111	English Composition I	3
PSY	Elective-Psychology	3
		18

SUMMER SEMESTER		Credits
FHD 250	Hospitality, Dietetic Work Experience (Management Systems III)	1

THIRD SEMESTER		Credits
FHD 231	Field Experience in Management Systems IV	3
FHD 235	Personnel Management, Work Simplification	3
FHD 245	Equipment and Layouts	3
ACC 112	Accounting I	3
PED	Fitness & Lifetime Sports	1
	Elective*	3
		16

FOURTH SEMESTER		Credits
FHD 234	Health Care Delivery Systems	3
FHD 242	Field Experience in Management Systems V	3
FHD 246	Hospitality Merchandising	
	or	3
FHD 241	Beverage Management & Catering	
ENL 121	English Composition II	
	or	3
ENL 202	Fundamentals of Speech	
SOC 111	Introduction to Sociology	3
		15

*Suggested Electives:
MTR 101 Medical Terminology I
CSC 118 Fundamentals of Computer Science

Co-op:
Summer (required)

PROGRAM OBJECTIVES

The general objective of the Dietetic Technician program is to prepare students for employment in medical care institutions in diet planning, kitchen supervision, and patient education. The program is designed to satisfy regulatory agency requirements for Dietetic Technicians.

The Dietetic Technician graduate should be able to:

1. demonstrate proper techniques of food preparation and food handling sanitation.
2. plan, develop and manage work schedules, job descriptions, menu planning, purchasing, portion control, and patient tray and cafeteria service.
3. describe equipment available on the market, and plan its arrangement, operation, and maintenance for efficiency and safety.
4. demonstrate creativity and sound thinking in personnel evaluations and in solving management problems.
5. conform to professional standards in personal appearance and demonstrate appropriate attitudes.
6. describe the physiological effects of food in the human body.
7. demonstrate a responsible attitude toward the dietetic profession and the community
8. demonstrate ability to communicate clearly, both verbally and in writing, with co-workers and patients.
9. understand financial and budgetary controls in health care institutions.
10. assist in dietary record keeping.
11. demonstrate knowledge of the responsibilities of a dietitian; identify areas in which he/she may be of help and areas in which he/she should ask for assistance.
12. apply knowledge of physical activities and sports in maintaining good health.

NOTE: The Dietetic Technician program is not accepting new students in 1986-87.

new

ELECTRICAL OCCUPATIONS (EO)

Certificate/2 years

This program offers the skills and theoretical background needed for a variety of careers. Graduates may work as electricians in electrical construction or in electrical maintenance where they would work with electrical machinery. They will also be qualified to develop the circuitry used to install and troubleshoot electrical and electronic machine controlled equipment and systems. The program emphasizes electrical and electronic basics and the development of skills through laboratory practice. Courses in communication, math, and science improve students' employment prospects.

Types of Jobs: Industrial maintenance, electrical troubleshooter, power company employee, construction union apprentice, electrical tester or inspector; self-employment in residential and commercial wiring.

Recommended High School Subjects: One year of general math, one year of basic algebra, and one year of science. One year of advanced algebra is desirable.

FIRST SEMESTER		Credits
ELT 116	Construction Lab I - Residential	5
ELT 117	Applied Direct Current Fundamentals	6
ENL 711	Communications	3
MTH 710	Technical Mathematics I	3
		17

SECOND SEMESTER		Credits
ELT 120	Construction Lab II - Commercial	5
ELT 126	Applied Alternating Current Fundamentals	6
ELT 127	Motor Maintenance and Repair	3
MTH 500	Technical Mathematics II	3
		17

THIRD SEMESTER		Credits
ELT 230	Construction Lab III - Industrial	3
ELT 231	Industrial Motor Control	6
PHS 500	Physics Survey	3
ELT 232	Basic Electronics for Industry	6
		18

FOURTH SEMESTER		Credits
ELT 240	Construction Lab IV - Practical Experience	3
ELT 243	Programmable Control	4
ELT 246	Electrical Power Lab - Machine Analysis	3
ELT 247	Industrial Control & Troubleshooting	4
EDT 102	Engineering Drafting	2
ELT 113	Accident Prevention	2
		18

PROGRAM OBJECTIVES

This program prepares graduates for jobs in residential, commercial or industrial electrical settings.

A graduate of Electrical Occupations should be able to:

1. demonstrate technical skills in a variety of electrical fields, apply accepted safety standards and meet work quality standards.
2. demonstrate knowledge in electrical theory, mathematics and physics and apply this knowledge in the construction and operation of electrical systems.
3. use and care for electrical tools and materials and demonstrate the ability to requisition these items from a stockroom or supplier.
4. read and develop blueprints and use this information in performing installations which comply with the National Electrical Code.
5. interpret ideas and develop plans through communicating with others.
6. operate, maintain and repair rotating electrical machines.
7. demonstrate working knowledge of electrical construction procedures in residential, commercial, and industrial installations.
8. demonstrate the use of troubleshooting equipment and standard testing procedures.
9. set up ladder relay logic systems and convert them to electronic programmable control systems.
10. operate and maintain electrical and electronic programmable control systems.
11. demonstrate knowledge of basic electronic control circuitry, devices, and schematic diagrams.
12. troubleshoot microprocessor-based industrial control devices such as robots.

new
w/ instructor in lab

ELECTRICAL TECHNOLOGY (EL)

Associate Degree/2 years

This program prepares students for entry-level jobs in industry as electrical/electronic technicians. Students develop the practical skills needed to work with electrical machinery, electric and electronic machine control devices and other electronic equipment. The program emphasizes electrical and electronic basics and includes theory and lab experience in troubleshooting, circuitry, industrial electronics, electrical machinery and electrical construction practices. A strong background in math, science and technical writing increases students' career opportunities.

Types of Jobs: Industrial maintenance, field service technician, electronic apparatus troubleshooter, electrical laboratory technician, electrical engineering technologist, design assistant, electrical layout facilitator, technical writer.

FIRST SEMESTER			Credits
ELT	111	Direct Current Fundamentals	5
ELT	113	Accident Prevention	2
ELT	116	Construction Lab I - Residential	5
ENL	111	English Composition I	3
MTH	103	College Algebra & Trigonometry I	3
			18

SECOND SEMESTER			Credits
ELT	120	Construction Lab II - Commercial	5
ELT	122	Alternating Current Fundamentals	5
ENL	201	Technical Writing	
		or	3
ENL	121	English Composition II	
MTH	104	College Algebra & Trigonometry II	3
PED		Fitness & Lifetime Sports	1
			17

THIRD SEMESTER			Credits
ELT	234	Electrical Motor Control	4
ELT	235	Industrial Electronics	6
EDT	102	Engineering Drafting	2
PHS	100	Physics-Mechanics	4
PED		Fitness & Lifetime Sports	1
			17

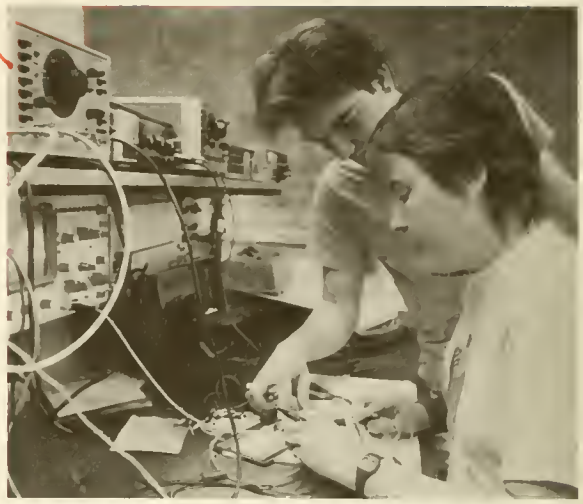
FOURTH SEMESTER			Credits
ELT	248	Electrical Systems Analysis	3
ELT	244	Advanced Electrical Theory	3
ELT	245	Introduction to Programmable Logic Control	4
PHS	101	Physics-Heat and Light	4
		Elective-Humanities/Social Science	3
			17

PROGRAM OBJECTIVES

This program equips students with the skills needed to understand and apply electrical/electronics technology theory. The program includes practical skills and theoretical aspects of the trade. Graduates will also have the background needed to transfer to a four-year Bachelor of Technology program.

Upon completion of the program, the graduate should be able to:

1. demonstrate technical skills in a variety of electrical fields, apply skills related to recent developments in the field and apply accepted safety standards.



2. demonstrate the ability to use algebra, trigonometry, and physics in the design, development, and analysis of electrical and electronic circuits and systems.
3. complete parts lists and order forms which demonstrate knowledge of catalogs and of the coding and numbering of components, devices, hardware, and materials.
4. interpret and develop blueprints, schematic diagrams, and wiring diagrams, and transform them into functioning systems that comply with the National Electrical Code and/or other specs.
5. evaluate electrical and electronic circuits and systems, and communicate the results of the evaluation verbally and/or in writing to others in or out of the field.
6. demonstrate basic knowledge of construction procedures and electrical wiring techniques.
7. demonstrate knowledge of test equipment, instrumentation, and electrical/electronic theory, including complex numbers and the network theorems used to analyze, troubleshoot, repair, and operate electrical/electronic circuits, systems, and equipment.
8. demonstrate knowledge of the theory and mechanics of rotating machinery, programmable logic control circuitry, transformer banks, and instrumentation.
9. demonstrate the ability to make effective decisions and understand the functions of competition and the need for personal growth.
10. troubleshoot microprocessor-based industrial control devices such as programmable controllers and robots.
11. recognize the need for physical fitness and lifelong recreational activities.

ELECTRONICS TECHNOLOGY (ET)

Associate Degree/2 years

The Williamsport Area Community College is responding to what amounts to nothing less than a total revolution in the electronics industry, by offering seven areas of concentration in the Electronics Technology program.

These areas of emphasis allow students to learn the essential fundamentals required for a wide range of job opportunities while increasing those competencies identified as most crucial to future technological development and viable employment.

The seven areas of concentration included in the Electronics Technology program are: Automation Instrumentation, Biomedical Electronics, Computer Automation Maintenance, Electronics Engineering (transfer), Fiber Optic Communications, Laser Electronics and Telecommunications.

Curriculum listings, types of jobs, and program objectives for each area of concentration are included in this Catalog.

ELECTRONICS TECHNOLOGY (ET)

AUTOMATION INSTRUMENTATION EMPHASIS

Associate Degree/2 years

This program prepares a student for the wide range of employment opportunities in the electronics industry. A core of fundamental courses and laboratory experiences will equip a student with basic knowledge of DC and AC electric circuits, solid state devices, and digital devices and systems. To enhance employment opportunities in the emerging automation of industry, specialized course work will include the area of microprocessor control systems and the instrumentation used to sense and control automation systems.

Types of Jobs: Automation system technician, automation development technician, robotics research technician, technical sales consultant and a variety of other technical positions in associated industries.

Recommended High School Subjects: Two years of algebra, physical science. Any math deficiencies should be corrected prior to entering the program.

FIRST SEMESTER		Credits
ENT 131	DC-AC Basics	3
ENT 116	Introduction to Solid State Devices	3
ENT 127	Introduction to Digital Electronics	3
ENT 132	DC-AC Measurements	1
ENT 154	Solid State Devices Applications	1
ENT 164	Digital Circuits Applications	1
MTH 103	College Algebra & Trigonometry I	3
ENL 111	English Composition I	3
		18

SECOND SEMESTER		Credits
ENT 135	DC-AC Circuit Analysis	3
ENT 121	Intermediate Solid State Devices & Circuits	3
ENT 249	Introduction to Microprocessors	3
ENT 136	Advanced DC-AC Circuit Measurements	1
ENT 161	Intermediate Devices Applications	1
ENT 254	Microprocessor Applications I	1
MTH 104	College Algebra & Trigonometry II	3
ENL 201	Technical Writing	3
		18

THIRD SEMESTER		Credits
ENT 252	Linear Integrated Circuits	3
ENT 262	Microprocessor Interfacing I	3
ENT 253	Linear Circuits Applications	1
ENT 263	Microprocessor Applications III	1
ENT 287	Instrumentation Automation Interfacing	3
ENT 288	Instrumentation Applications I	1
	Elective-Math/Science or Computer Science	3
		15

FOURTH SEMESTER		Credits
ENT 275	Microprocessor Interfacing II	3
ENT 294	Instrumentation - Transducers	3
ENT 291	Microprocessor Interfacing Applications	1
ENT 277	Automated Systems Maintenance	3
ENT 278	Automated Systems Maintenance Applications	1
ENT 295	Instrumentation - Transducer Applications	1
	Elective - Humanities/Social Science	3
		15

PROGRAM OBJECTIVES

A graduate should be able to:

1. Apply working knowledge of AC and DC Circuits.
2. Demonstrate knowledge of the theory and operation of solid state devices, linear and digital integrated circuits, and microprocessors.
3. Solve mathematical problems relating to circuit analysis, digital electronics and other systems.
4. Read and interpret technical literature and specifications.
5. Communicate verbally with others and write technical reports.
6. Perform accurate and valid parameter measurements with laboratory test instruments while observing standard safety practices.
7. Program microprocessor-based systems and interface peripheral devices.
8. Demonstrate understanding of the operation of analog and digital measuring instruments.
9. Discuss the principle of operation, capabilities and limitations and typical applications of a variety of commonly used transducers.
10. Demonstrate understanding of signal conditioning circuits and devices for transducers and control devices used in automated manufacturing systems.
11. Demonstrate familiarity with automated manufacturing systems.
12. Troubleshoot the electronics of automated manufacturing systems.

new

ELECTRONICS TECHNOLOGY (ET)
BIOMEDICAL ELECTRONICS EMPHASIS
Associate Degree/2 years

This program prepares a student for the wide range of employment opportunities in the electronics industry. A core of fundamental courses and laboratory experiences will equip a student with basic knowledge of DC and AC electric circuits, solid state devices, and digital devices and systems. To enhance employment opportunities in the biomedical field, human anatomy, and physiology, along with specialized course work in biomedical instrumentation, is presented in this program.

Types of Jobs: Hospital biomedical technician, biomedical equipment field engineer, biomedical research technician, biomedical technician sales consultant and a variety of other technical positions in associated industries.
Recommended High School Subjects: Two years of algebra, biological science. Any math deficiencies should be corrected prior to entering the program.

FIRST SEMESTER		Credits
ENT 131	DC-AC Basics	3
ENT 116	Introduction to Solid State Devices	3
ENT 127	Introduction to Digital Electronics	3
ENT 132	DC-AC Measurements	1
ENT 154	Solid State Devices Applications	1
ENT 164	Digital Circuits Applications	1
MTH 103	College Algebra & Trigonometry I	3
BIO 115	Human Anatomy and Physiology I	4
		19

SECOND SEMESTER		Credits
ENT 135	DC-AC Circuit Analysis	3
ENT 121	Intermediate Solid State Devices & Circuits	3
ENT 249	Introduction to Microprocessors	3
ENT 136	Advanced DC-AC Circuit Measurements	1
ENT 161	Intermediate Devices Applications	1
ENT 254	Microprocessor Applications I	1
MTH 104	College Algebra & Trigonometry II	3
BIO 125	Human Anatomy and Physiology II	4
		19

THIRD SEMESTER		Credits
ENT 252	Linear Integrated Circuits	3
ENT 262	Microprocessor Interfacing I	3
ENT 253	Linear Circuits Applications	1
ENT 263	Microprocessor Applications III	1
ENT 285	Laser Optic Devices & Systems I	3
ENT 286	Laser Optic Devices & Systems Applications	1
ENL 111	English Composition I	3
	Elective - Humanities/Social Science	3
		18

FOURTH SEMESTER		Credits
ENT 275	Microprocessor Interfacing II	3
ENT 255	Biomedical Instrumentation and Measurements	3
ENT 291	Microprocessor Interfacing Applications	1
ENT 296	Biomedical Equipment Maintenance Applications	1
ENT 290	Laser Optic Devices & Systems II	3
ENT 292	Laser Applications	1
ENT 201	Technical Writing	3
		15

PROGRAM OBJECTIVES

A graduate should be able to:

1. Apply working knowledge of AC and DC circuits.
2. Demonstrate knowledge of the theory and operation of solid state devices, linear and digital integrated circuits, and microprocessors.
3. Solve mathematical problems relating to circuit analysis, digital electronics and other systems.
4. Read and interpret technical literature and specifications.
5. Communicate verbally with others and write technical reports.
6. Perform accurate and valid parameter measurements with laboratory test instruments while observing standard safety practices.
7. Program microprocessor-based systems and interface peripheral devices.
8. Provide a basic knowledge of human anatomy and physiology.
9. List the various transducers used for sensing body functions and structures and describe their principles of operation.
10. Discuss in detail the steps required to insure patient safety when biomedical measurements are taken.
11. Discuss the applications of the computer in the biomedical field.
12. Identify the various bioelectric potentials associated with the human body.
13. Define basic physiological and medical terms as they relate to biomedical technicians.

new

ELECTRONICS TECHNOLOGY (ET)

COMPUTER-AUTOMATION MAINTENANCE EMPHASIS

Associate Degree/2 years

This program prepares a student for the wide range of employment opportunities in the electronics industry. A core of fundamental courses and laboratory experiences will equip a student with basic knowledge of DC and AC electric circuits, solid state devices, and digital devices and systems. To enhance employment opportunities in the dynamic computer-driven automation industry. Specialized course work in computer maintenance, automated machine tools and industrial robots is emphasized.

Types of Jobs: Computer field service engineer, automation electronics technical supervisor, technical sales consultant and a variety of other technical positions in associated industries.
Recommended High School Subjects: Two years of algebra, physical science. Any math deficiencies should be corrected prior to entering the program.

FIRST SEMESTER		Credits
ENT 131	DC-AC Basics	3
ENT 116	Introduction to Solid State Devices	3
ENT 127	Introduction to Digital Electronics	3
ENT 132	DC-AC Measurements	1
ENT 154	Solid State Devices Applications	1
ENT 164	Digital Circuits Applications	1
MTH 103	College Algebra & Trigonometry I	3
ENL 111	English Composition I	3
		18

SECOND SEMESTER		Credits
ENT 135	DC-AC Circuit Analysis	3
ENT 121	Intermediate Solid State Devices & Circuits	3
ENT 249	Introduction to Microprocessors	3
ENT 136	Advanced DC-AC Circuit Measurements	1
ENT 161	Intermediate Devices Applications	1
ENT 254	Microprocessor Applications I	1
MTH 104	College Algebra & Trigonometry II	3
ENL 201	Technical Writing	3
		18

THIRD SEMESTER		Credits
ENT 252	Linear Integrated Circuits	3
ENT 262	Microprocessor Interfacing I	3
ENT 253	Linear Circuits Applications	1
ENT 263	Microprocessor Application III	1
ENT 270	Introduction to Computer Maintenance	3
ENT 271	Computer Maintenance Applications I	1
ENT 272	Machine Tool Applications for Electronics	2
	Elective - Math/Science or Computer Science	3
		17

FOURTH SEMESTER		Credits
ENT 275	Microprocessor Interfacing II	3
ENT 276	Advanced Computer Maintenance	3
ENT 291	Microprocessor Interfacing Applications	1
ENT 277	Automated Systems Maintenance	3
ENT 278	Automated Systems Maintenance Applications	1
ENT 297	Computer Maintenance Applications II	1
	Elective - Humanities/Social Sciences	3
		15

PROGRAM OBJECTIVES

A graduate should be able to:

1. Apply working knowledge of AC and DC circuits.
2. Demonstrate knowledge of the theory and operation of solid state devices, linear and digital integrated circuits, and microprocessors.
3. Solve mathematical problems relating to circuit analysis, digital electronics and other systems.
4. Read and interpret technical literature and specifications.
5. Communicate verbally with others and write technical reports.
6. Perform accurate and valid parameter measurements with laboratory test instruments while observing standard safety practices.
7. Program microprocessor-based systems and interface peripheral devices.
8. Perform service-related administrative functions.
9. Service and maintain computerized equipment at subsystem and component level.
10. Perform routine preventative maintenance procedures.
11. Perform mechanical adjustments and repairs on computer peripherals.
12. Perform basic operations on a variety of automated manufacturing equipment.
13. Demonstrate a working knowledge of hydraulics, pneumatics, gears and mechanics involved in automated manufacturing equipment.
14. Service and maintain automated manufacturing equipment.
15. Operate specialized test equipment required to service computers and automated manufacturing equipment.

new

ELECTRONICS TECHNOLOGY (ET)
ELECTRONICS ENGINEERING EMPHASIS
Associate Degree/2 years

The program prepares a student for the wide range of employment opportunities in the electronics industry. A core of fundamental courses and laboratory experiences will equip a student with basic knowledge of DC and AC electric circuits, solid state devices, and digital devices and systems. To enhance transfer to advanced learning institutions and further education toward advanced degrees at the bachelor degree level, advanced mathematics and science courses are included in this program.

Types of Jobs: Electronic technician for research, electronic engineering technician, electronic design technician and other technical positions in associated industries.
Recommended High School Subjects: Two years of algebra and other advanced mathematics, physical sciences. Any math deficiencies should be corrected prior to entering the program.

FIRST SEMESTER		Credits
ENT 131	DC-AC Basics	3
ENT 116	Introduction to Solid State Devices	3
ENT 127	Introduction to Digital Electronics	3
ENT 132	DC-AC Measurements	1
ENT 154	Solid State Devices Applications	1
ENT 164	Digital Circuits Applications	1
MTH 103	College Algebra & Trigonometry I	3
ENL 111	English Composition I	3
		18

SECOND SEMESTER		Credits
ENT 135	DC-AC Circuit Analysis	3
ENT 121	Intermediate Solid State Devices & Circuits	3
ENT 249	Introduction to Microprocessors	3
ENT 136	Advanced DC-AC Circuit Measurements	1
ENT 161	Intermediate Devices Applications	1
ENT 254	Microprocessor Applications I	1
MTH 104	College Algebra & Trigonometry II	3
ENL 201	Technical Writing	3
		18

THIRD SEMESTER		Credits
ENT 252	Linear Integrated Circuits	3
ENT 262	Microprocessor Interfacing I	3
ENT 253	Linear Circuits Applications	1
ENT 263	Microprocessor Applications III	1
MTH 238	Calculus I	4
PHS 115	College Physics I	4
		16

FOURTH SEMESTER		Credits
ENT 275	Microprocessor Interfacing II	3
ENT 291	Microprocessor Interfacing Applications	1
MTH 248	Calculus II	4
PHS 125	College Physics II	4
	Elective - Humanities/Social Science	3
		15

PROGRAM OBJECTIVES

A graduate should be able to:

1. Apply working knowledge of AC and DC Circuits.
2. Demonstrate knowledge of the theory and operation of solid state devices, linear and digital integrated circuits, and microprocessors.

3. Solve mathematical problems relating to circuit analysis, digital electronics and other systems.
4. Read and interpret technical literature and specifications.
5. Communicate verbally with others and write technical reports.
6. Perform accurate and valid parameter measurements with laboratory test instruments while observing standard safety practices.
7. Program microprocessor-based systems and interface peripheral devices.
8. Acquire advanced mathematical skills using calculus.
9. Demonstrate fundamental principles of physical phenomenon.

ELECTRONICS TECHNOLOGY (ET)
FIBER OPTIC COMMUNICATION EMPHASIS
Associate Degree/2 years

This program prepares a student for the wide range of employment opportunities in the electronics industry. A core of fundamental courses and laboratory experiences will equip a student with basic knowledge of DC and AC electric circuits, solid state devices, and digital devices and systems. To enhance employment opportunities in the fiber optic telecommunication industry, specialized course work in laser optic devices and systems and fiber optic devices and systems is emphasized.

Types of Jobs: Fiber optic telecommunication technician, installation supervisor, fiber optic research technician, technical sales consultant and a variety of other technical positions in associated industries.
Recommended High School Subjects: Two years of algebra, physical science. Any math deficiencies should be corrected prior to entering the program.

FIRST SEMESTER		Credits
ENT 131	DC-AC Basics	3
ENT 116	Introduction to Solid State Devices	3
ENT 127	Introduction to Digital Electronics	3
ENT 132	DC-AC Measurements	1
ENT 154	Solid State Devices Applications	1
ENT 164	Digital Circuits Applications	1
MTH 103	College Algebra & Trigonometry I	3
ENL 111	English Composition I	3
		18

SECOND SEMESTER		Credits
ENT 135	DC-AC Circuit Analysis	3
ENT 121	Intermediate Solid State Devices & Circuits	3
ENT 249	Introduction to Microprocessors	3
ENT 136	Advanced DC-AC Circuit Measurements	1
ENT 161	Intermediate Devices Applications	1
ENT 254	Microprocessor Applications I	1
MTH 104	College Algebra & Trigonometry II	3
ENL 201	Technical Writing	3
		18

THIRD SEMESTER		Credits
ENT 280	Introduction to Communication Devices	3
ENT 281	Introduction to Communication Systems	3
ENT 285	Introduction to Laser Optic Devices & Systems	3
ENT 282	Communication Circuits Applications I	1
ENT 283	Communication Circuits Applications II	1
ENT 286	Laser Optic Devices & Systems Applications	1
	Elective - Math/Science or Computer Science	3
		15

FOURTH SEMESTER		Credits
ENT 258	Advanced Communication Systems	3
ENT 259	Advanced Communication Laboratory	1
ENT 279	Fiber Optic Devices & Systems	3
ENT 293	Fiber Optic Applications	1
ENT 290	Laser Optic Devices & Systems II	3
ENT 292	Laser Applications	1
	Elective - Humanities/Social Science	3
		15

PROGRAM OBJECTIVES

A graduate should be able to:

1. Apply working knowledge of AC and DC Circuits.
2. Demonstrate knowledge of the theory and operation of solid state devices, linear and digital integrated circuits, and microprocessors.
3. Solve mathematical problems relating to circuit analysis, digital electronics and other systems.
4. Read and intepret technical literature and specifications.
5. Communicate verbally with others and write technical reports.
6. Perform accurate and valid parameter measurements with laboratory test instruments while oberving standard safety practices.
7. Program microprocessor-based systems and interface peripheral devices.
8. Describe the different types of lasers and their characterisitics.
9. Perform measurements of fiber optic cables at light frequencies.
10. Attach connectors, splices and other passive components in a fiber optic system.
11. Demonstrate the operation and function of frequency and time division multiplexers and demultiplexers.
12. Demonstrate knowledge of RF circuits and components such as oscillators, amplifiers, mixers, antennas and transmission lines.
13. Install, test and troubleshoot baseband and broadband cable, radio and fiber optic local area networks.
14. Perform measurements and troubleshooting on synchronous and asynchronous data communication equipment.

ELECTRONICS TECHNOLOGY (ET)
LASER ELECTRONICS EMPHASIS
Associate Degree/2 years

This program prepares a student for the wide range of employment opportunities in the electronics industry. A core of fundamental courses and laboratory experiences will equip a student with basic knowledge of DC and AC electric circuits, solid state devices, and digital devices and systems. Designed to enhance employment opportunities in the advanced technology laser industry. Specialized course work in the physical sciences and laser optic components and systems is emphasized.

Types of Jobs: Laser research technician, laser manufacturing technician, technical sales consultant and a variety of other technical positions in associated industries.
Recommended High School Subjects: Two years of algebra, physical science. Any math deficiencies should be corrected prior to entering the program.

FIRST SEMESTER		Credits
ENT 131	DC-AC Basics	3
ENT 116	Introduction to Solid State Devices	3
ENT 127	Introduction to Digital Electronics	3
ENT 132	DC-AC Measurements	1
ENT 154	Solid State Devices Applications	1
ENT 164	Digital Circuits Applications	1
MTH 103	College Algebra & Trigonometry I	3
PHS 115	College Physics I	4
		19

SECOND SEMESTER		Credits
ENT 135	DC-AC Circuit Analysis	3
ENT 121	Intermediate Solid State Devices & Circuits	3
ENT 249	Introduction to Microprocesors	3
ENT 136	Advanced DC-AC Circuit Measurements	1
ENT 161	Intermediate Devices Applications	1
ENT 254	Microprocessor Applications I	1
MTH 104	College Algebra & Trigonometry II	3
PHS 125	College Physics II	4
		19

THIRD SEMESTER		Credits
ENT 252	Linear Integrated Circuits	3
ENT 253	Linear Circuits Applications	1
ENT 262	Microprocessor Interfacing I	3
ENT 263	Microprocessor Applications III	1
ENT 285	Laser Optic Devices & Systems I	3
ENT 286	Laser Optic Devices & Systems Applications	1
ENL 111	English Composition I	3
	Elective - Humanities/Social Science	3
		18

FOURTH SEMESTER		Credits
ENT 275	Microprocessor Interfacing II	3
ENT 279	Fiber Optic Devices & Systems	3
ENT 290	Laser Optic Devices & Systems II	3
ENT 291	Microprocessor Interfacing Applications	1
ENT 292	Laser Applications	1
ENT 293	Fiber Optic Applications	1
ENT 201	Technical Writing	3
		15

PROGRAM OBJECTIVES

A graduate should be able to:

1. Apply working knowledge of AC and DC circuits.
2. Understand the theory and operation of solid state devices, linear and digital integrated circuits, and microprocessors.
3. Solve mathematical problems relating to circuit analysis, digital electronics and other systems.
4. Read and interpret technical literature and specifications.
5. Communicate verbally with others and write presentable technical reports.
6. Perform accurate and valid parameter measurements with laboratory test instruments while observing standard safety practices.
7. Program microprocessor-based systems and interface peripheral devices.
8. Demonstrate knowledge of the properties and propagation of light.
9. Apply the laws of reflection and refraction to light as it passes through an optical system.
10. Demonstrate knowledge of optical equipment, hardware, and its applications.
11. Describe the generation of light in a laser.
12. Describe the different types of lasers and list their characteristics.
13. Classify lasers according to their characteristics and applications.
14. Practice laser safety procedures and precautions.
15. Demonstrate knowledge of the theory and operation of laser support equipment.
16. Demonstrate knowledge of the theory of operation and use of laser power and energy measurement instruments.
17. Demonstrate knowledge of and have experience with laser system applications.

new

ELECTRONICS TECHNOLOGY (ET)
TELECOMMUNICATION ELECTRONICS EMPHASIS
Associate Degree/2 years

This program prepares a student for the wide range of employment opportunities in the electronics industry. A core of fundamental courses and laboratory experiences will equip a student with basic knowledge of DC and AC electric circuits, solid state devices, and digital devices and systems. Designed to enhance employment opportunities in the emerging telecommunications industry. Specialized course work in the area of communication circuits and systems will include fiber optic transmission systems.

Types of Jobs: Microwave system technician, two-way radio technician, broadcast engineer, CATV installation technician, CATV maintenance supervisor, earth station technician, technical sales consultant and a variety of other technical positions in associated industries.

Recommended High School Subjects: Two years of algebra, physical science. Any math deficiencies should be corrected prior to entering the program.

FIRST SEMESTER		Credits
ENT 131	DC-AC Basics	3
ENT 116	Introduction to Solid State Devices	3
ENT 127	Introduction to Digital Electronics	3
ENT 132	DC-AC Measurements	1
ENT 154	Solid State Devices Applications	1
ENT 164	Digital Circuits Applications	1
MTH 103	College Algebra & Trigonometry I	3
ENL 111	English Composition I	3
		18

SECOND SEMESTER		Credits
ENT 135	DC-AC Circuit Analysis	3
ENT 121	Intermediate Solid State Devices & Circuits	3
ENT 249	Introduction to Microprocesors	3
ENT 136	Advanced DC-AC Circuit Measurements	1
ENT 161	Intermediate Devices Applications	1
ENT 254	Microprocessor Applications I	1
MTH 104	College Algebra & Trigonometry II	3
ENL 201	Technical Writing	3
		18

THIRD SEMESTER		Credits
ENT 280	Introduction to Communication Devices	3
ENT 281	Introduction to Communication Systems	3
ENT 262	Microprocessor Interfacing I	3
ENT 282	Communication Circuits Applications I	1
ENT 283	Communication Circuits Applications II	1
ENT 263	Microprocessor Applications III	1
	Elective - Math/Science or Computer Science	3
		15

FOURTH SEMESTER		Credits
ENT 275	Microprocessor Interfacing II	3
ENT 258	Advanced Communication Systems	3
ENT 279	Fiber Optic Devices and Systems	3
ENT 291	Microprocessor Interfacing Applications	1
ENT 259	Advanced Communication Laboratory	1
ENT 293	Fiber Optic Applications	1
	Elective - Humanities/Social Sciences	3
		15

PROGRAM OBJECTIVES

A graduate should be able to:

1. Apply working knowledge of AC and DC Circuits.
2. Demonstrate knowledge of the theory and operation of solid state devices, linear and digital integrated circuits, and microprocessors.
3. Solve mathematical problems relating to circuit analysis, digital electronics and other systems.
4. Read and interpret technical literature and specifications.
5. Communicate verbally with others and write technical reports.
6. Perform accurate and valid parameter measurements with laboratory test instruments while observing standard safety practices.
7. Program microprocessor-based systems and interface peripheral devices.
8. Demonstrate knowledge of RF circuits and components such as oscillators, amplifiers, mixers, antennas and transmission lines.
9. Install, test and troubleshoot analog or digital communications systems.
10. Perform measurements on and troubleshoot synchronous and asynchronous data communications equipment.
11. Perform measurements on and troubleshoot analog and digital modulation and demodulation systems.
12. Install, test and troubleshoot baseband and broadband cable, radio, and fiber optic local area networks.
13. Demonstrate the operation and function of frequency and time division multiplexers and demultiplexers.
14. Perform test and measurements on satellite and terrestial microwave communications equipment.

ENGINEERING DRAFTING TECHNOLOGY (ED)

Associate Degree/2 years

This program trains students to make a variety of engineering drawings and calculations. It provides a broad knowledge of mechanical drafting and engineering procedures, and background skills in mathematics, science and communication.

Types of Jobs: Mechanical detail and layout drafting, engineering assistant or aide, checker, field department supervisor, or jobs in related areas such as planning, traffic safety, maintenance, and purchasing.
Recommended High School Subjects: Two years of algebra, one year of science.

FIRST SEMESTER		Credits
EDT 108	Manufacturing Processes	3
EDT 111	Basic Drafting I (8 weeks)	4
EDT 112	Basic Drafting II (8 weeks)	4
ENL 111	English Composition I	3
MTH 103	College Algebra & Trigonometry I	3
PED	Fitness & Lieftime Sports	1
		18

SECOND SEMESTER		Credits
EDT 121	Power Transmission (8 weeks)	4
EDT 122	Mechanisms (8 weeks)	4
ENL 121	English Composition II	3
MTH 104	College Algebra & Trigonometry II	3
PED	Fitness & Lifetime Sports	1
		15

THIRD SEMESTER		Credits
EDT 231	Detail & Assembly Drawings (8 weeks)	4
EDT 232	Applied Drafting Techniques (8 weeks)	4
PHS 100	Physics-Mechanics	4
	Elective	3/4
		15/16

FOURTH SEMESTER		Credits
EDT 241	Advanced Detail I (8 weeks)	4
EDT 242	Advanced Detail II (8 weeks)	4
PHS 106	Introduction to Metallurgy	4
	Elective	3/4
		15/16

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the program is to train students in the skills needed for a variety of entry-level jobs in engineering drafting.

A graduate of this program should be able to:

1. apply the basic elements of drafting.
2. analyze and design simple power transmission installations.
3. make detail and assembly drawings.
4. detail casting drawings from sketches and models.
5. redesign castings into weldment drawings.
6. draw the various methods of piping.
7. detail assembly and sub-assembly drawings from layouts.
8. describe and apply various methods of manufacturing related to engineering drafting.
9. describe and apply principles of physics and metallurgy to engineering drafting.
10. use the mathematical skills needed to solve applied problems in engineering drafting.
11. communicate effectively in small group and interpersonal situations that may occur in industry.
12. participate as an informed citizen in a democratic society based on values acquired through exposure to the humanities and social sciences.
13. develop fundamental skills in a lifetime sport.
14. demonstrate fundamental skills and knowledge in the use of computer-aided drafting (CAD).
15. perform basic drawing functions on computer-aided drafting equipment.

FLORICULTURE (FL)

Associate Degree/2 years

This program prepares graduates for exciting jobs in the rapidly expanding industry of growing and marketing floral products. Production of greenhouse crops, designing and merchandising flower shop arrangements and interior plantscaping are covered in detail.

Types of Jobs: Greenhouse plant production, floral design, flower sales, flower shop management, interior plantscaping, starting your own business.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER		Credits
BIO 111	Basic Botany	3
HRT 110	Soils & Fertilizers	3
HRT 111	Ornamental Plants	2
HRT 112	Horticulture Operations & Structures	3
ENL 111	English Composition I	3
MTH 710	Technical Mathemathics I	3
		17

SECOND SEMESTER		Credits
HRT 120	Bedding Plant Production	3
HRT 122	Fresh & Permanent Floral Designs	3
CSC 102	Introduction to Microcomputers	3
ENL 202	Fundamentals of Speech	3
PED	Fitness & Lifetime Sports	1
	Elective-Social Science/Humanities	3
		16

THIRD SEMESTER		Credits
HRT 211	Greenhouse Potted Plant Production	3
HRT 212	Specialty Floral Designs	3
HRT 210	Plant Propagation	3
HRT 213	Interior Plantscape Plants	3
HRT 239	Plant Insects & Diseases	3
PED	Fitness & Lifetime Sports	1
		16

FOURTH SEMESTER		Credits
HRT 221	Greenhouse Cut Flower Production	3
HRT 222	Greenhouse Environment & Crop Management	3
HRT 223	Flower Shop Management & Wedding Design	3
HRT 220	Horticulture Mechanics	3
	Elective	3
		15

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The goal of the Floriculture program is to prepare students for employment or self-employment in the retail florist and greenhouse industry or related businesses.

A graduate of Floriculture should be able to:

1. relate basic knowledge of botany, chemistry, and horticulture soils to plant growth and culture.
2. identify the skills needed to organize thoughts and ideas and demonstrate the ability to communicate, verbally and in writing, in a manner that can be easily understood.
3. solve math problems related to the use of soil amendments, fertilizers, and plant growth control chemicals, and apply effective cost estimating, pricing, and record-keeping techniques.
4. identify common trees and shrubs, ground covers, various annuals, biennials, and perennials by botanical and common names and describe the outstanding characteristics of each; summarize landscape, garden center, and greenhouse uses and cultural requirements of these plants.
5. select the proper procedures, define the physiological basis, and describe practical applications of the reproduction of plants by asexual and sexual methods.
6. describe proper design and operation of greenhouse environmental systems, and evaluate their advantages and disadvantages in commercial production.
7. summarize and assess plant growth requirements for commercial production of greenhouse crops, and economically produce a crop from seed or cutting to harvest and sales.
8. prepare salable floral designs of fresh, dried, and silk flowers using design guidelines, working within the time and cost requirements of the retail florist industry.
9. outline the management requirements of a flower shop — including record keeping and employee/employer relations — and demonstrate skills in designing and selling the types of arrangements and accessories used for special occasions.
10. identify and describe the effect of insects, disease, and physiological problems on plants, develop plans to control these problems, and obtain the Pennsylvania Private Applicator's License
11. demonstrate knowledge of the operation and repair of equipment and mechanical systems used in the floriculture industry.
12. demonstrate a responsible attitude in relationships with employers, fellow employees, and toward the world of work.
13. identify foliage plants commonly used indoors by botanical and common names, state distinguishing characteristics of each, and describe their use and culture in various indoor landscape areas.
14. demonstrate an appreciation of physical fitness and lifelong recreational activities.

new

FOOD & HOSPITALITY MANAGEMENT (FH)

Associate Degree/2 years

This program includes academic classroom study and practical laboratory work in business and personnel management, food preparation and supervision, and related subjects. Guest speakers, field trips, and directed community field work experiences expand students' learning experiences.

Types of Jobs: Food service supervisory positions in restaurants, clubs, hospitals, nursing homes, child care centers, schools, and colleges; front office or housekeeping manager in hotels and motels.

*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER		Credits
FHD 111	Introductory Foods	3
FHD 112	Nutrition	3
FHD 115	Purchasing, Storage, & Sanitation	3
FHD 110	Dining Room Management	3
MTH 101	Introduction to Mathematics I	3
ENL 111	English Composition I	3
		18

SECOND SEMESTER		Credits
FHD 121	Quantity Food Preparation	3
FHD 125	Menu Planning & Cost Control	3
ACC 112	Accounting I	3
CSC 102	Introduction to Microcomputers	3
	Elective-Science	3/4
		15/16

PRACTICUM-SUMMER TERM		Credits
FHD 250	Hospitality, Dietetic Work Experience	1

THIRD SEMSETER		Credits
MGT 248	Supervision and Human Relations	3
FHD 245	Equipment and Layouts	3
ENL 202	Fundamentals of Speech	3
FHD 261	Advanced Garde Manger & Catering	3
	Elective - Social Science/Humanities	3
PED	Fitness & Lifetime Sports	2
		17

FOURTH SEMESTER		Credits
FHD 126	Front Office Management & Housekeeping	3
FHD 129	Beverage Management	3
FHD 260	Restaurant Business & Law	3
ENL 201	Technical Writing	3
FHD 263	Classical Cuisine	3
	Elective*	3
		18

*Suggested Elective
MGT 247 Small Business Management

Co-op:
Summer (required)

PROGRAM OBJECTIVES

The general objective of the Food and Hospitality Management program is to prepare students for food service management jobs in restaurants, schools, institutions, and catering operations. Options within the program allow atudents to prepare for employment in front office and housekeeping positions in hotels and motels.

Upon completion of the program, the student should be able to:

1. demonstrate proper techniques of food preparation and food handling sanitation.
2. plan, develop and manage work schedules, job descriptions, menu planning, purchasing, portion control, and dining room and cafeteria service.
3. describe the equipment available on the market and plan its arrangement, operation, and maintenance for efficiency and safety.
4. demonstrate creativity and sound thinking in solving management problems and in merchandising techniques.
5. conform to professional standards in personal appearance and demonstrate appropriate attitudes.
6. describe the physiological effects of food in the human body.
7. demonstrate a responsible attitude toward the dietetic profession and the community.
8. communicate clearly, both verbally and in writing.
9. demonstrate the ability to keep accurate food business records and understand the relationship between financial profits and good business ethics.
10. plan and cater events; apply knowledge of all types of beverages.
11. demonstrate working knowledge of the factors involved in establishing and operating a small business in the United States.
12. demonstrate working knowledge of front office practice and housekeeping procedures (students who select the lodging option).
13. apply knowledge of physical acitivities and sports in maintaining good health.

FOREST TECHNOLOGY (FR)

Associate Degree/2 years

This program covers basic forestry techniques with an emphasis on outdoor learning and practical hands-on experiences. It includes both academic and specialized forestry courses to prepare students for a variety of jobs in industry.

Types of Jobs: Forest fire control; wildlife habitat improvement; maintenance of forest roads, structures, and recreational areas; timber estimation, marking and stand improvement; pulpwood procurement; logging supervisor; location and survey of forest property lines; lumber inspector; dry kiln operator; lumber yard supervisor, quality control technician, wood products sales, mill manager and equipment sales.

Recommended High School Subjects: Two years of algebra, one year of science.

*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER		Credits
FOR 111	Dendrology	3
FOR 113	Forest Mensuration	3
FOR 115	Forest Botany	3
MTH 101	Introduction to Mathematics I	
	or	3
MTH 103	College Algebra/Trigonometry I	
ENL 111	English Composition I	3
PED	Fitness & Lifetime Sports	1
		16

SECOND SEMESTER		Credits
FOR 120	Forest Surveying I	2
FOR 122	Photogrammetry	2
FOR 124	Advanced Forest Mensuration	3
FOR 125	Forest Ecology	3
MTH 102	Introduction to Mathemathics II	
	or	3
MTH 104	College Algebra/Trigonometry II	
ENL 121	English Compostion II	
	or	3
ENL 201	Technical Writing	
		16

FORESTRY EMPHASIS

THIRD SEMESTER		Credits
FOR 232	Forest Surveying II	3
FOR 233	Equipment & Machinery	3
FOR 234	Timber Harvesting	3
FOR 236	Silviculture	3
FOR 237	Forest Recreation	1
CSC 102	Introduction to Microcomputers	3
		16

FOURTH SEMESTER		Credits
FOR 245	Wildlife Management	3
FOR 246	Forest Land Management	3
FOR 248	Forest Protection	3
ECO 201	Principles of Economics	3
PED	Fitness & Lifetime Sports	1
	Elective	3/4
		16/17

WOOD PRODUCTS EMPHASIS

THIRD SEMESTER		Credits
FOR 233	Equipment/Machinery	3
FOR 234	Timber Harvesting	3
FOR 230	Sawmilling	3
FOR 238	Lumber Drying	3
FOR 239	Wood Identification/Properties	1
CSC 102	Introduction to Microcomputers	3
		16

FOURTH SEMESTER		Credits
FOR 240	Production Management	3
FOR 241	Lumber/Log Grading	3
MGT 248	Supervision and Human Relations	
MGT 240	Marketing	3
PED	Fitness & Lifetime Sports	1
	Elective	3/4
		16/17

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the Forest Technology Program is to prepare students for employment in the forest industry and related businesses.

The graduate of the Forest Technology program should be able to:

1. write clear, grammatically correct and accurate technical reports and demonstrate skills in verbal communication.
2. identify selected species of trees and shrubs by their scientific and common names, general uses, site characteristics and geographic distribution.
3. apply the fundamentals of plane surveying — including the use and care of surveying equipment, maps and map making, and the theory of measurements.
4. measure the volume of standing timber and the volume of products removed from the forest.
5. prepare a forest land management plan for a property using the concepts of multiple use and sustained yield forest management.
6. demonstrate knowledge of the silvicultural treatments used to regulate stand composition, regenerate stands, increase growth rates and improve timber quality.
7. apply the basic theories, principles, and techniques used in timber harvesting and demonstrate skills in the operation and maintenance of tools and equipment used to harvest a forest crop.
8. analyze the relationship between humans, other organisms, and the forest environment.
9. describe the life history, food requirements, and distribution of the major game and non-game birds and mammals of Pennsylvania.
10. identify and describe the function of tree parts and of selected plants and describe their relation to soil.
11. describe the processing operations related to various forest products and the properties and uses of these products; identify and describe the characteristics and structure of wood.
12. describe the characteristics and control of various forest pests, diseases, and fire problems.
13. use the appropriate math skills to solve applied problems in the field of forestry.
14. develop fundamental skills in lifetime sports.
15. grade hardwood and softwood logs and lumber based on industry standards.
16. describe the process of finding markets, methods of merchandising, distribution to consumer and markup procedures.
17. demonstrate familiarity with the principles of cutting lumber to obtain the best grade.
18. demonstrate basic skills in handling, stacking and kiln and air drying of lumber.
19. identify the important commercial wood species and relate their characteristics to their potential use.
20. describe the process involved in converting logs into various wood products.

GRAPHIC ARTS (GA)

Associate Degree/2 years

This program provides practical skills in the graphic arts together with management, marketing, and supervisory training. Laboratory and shop work on modern graphic arts equipment develops students' skills in typesetting, pasting up mechanicals, and in camera, press and bindery operations.

Types of Jobs: Graphic arts executive training, in-plant supervisors, self-employed printer, marketing and technical sales service.
Recommended High School Subjects: Two years of algebra, one year of science.

FIRST SEMESTER		Credits
GCO 511	Layout and Design	4
GCO 512	Typographic Composition	4
ENL 111	English Composition I	3
SEC 509	Typewriting	1
MTH	Elective-Math*	3
PED	Fitness and Lifetime Sports	1
		16

SECOND SEMESTER		Credits
GCO 521	Process Camera	4
GCO 522	Film Assembly & Imposition	4
ENL 121	English Composition II	
	or	3
ENL 201	Technical Writing	
MGT 247	Small Business Management	3
PED	Fitness & Lifetime Sports	1
		15

THIRD SEMESTER		Credits
GCO 631	Platemaking, Substrates & Finishing	4
GCO 632	Press Operations	4
GCO 635	Printing Estimating Practices	3
CHM 109	Chemistry for Graphic Arts	3
	Elective	3
		17

FOURTH SEMESTER		Credits
GCO 641	Advanced Typographic Composition	3
GCO 642	Advanced Process Camera and Stripping	3
GCO 645	Printing Processes	3
CSC 118	Fundamentals of Computer Science	3
	Elective	3
		15

ELECTIVES should be selected from 100 and 200-level courses outside the program of study.

*MTH 101 Introduction to Mathematics I, MTH 102 Introduction to Mathematics II, MTH 103 College Algebra & Trigonometry I, MTH 104 College Algebra & Trigonometry II.

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of this program is to prepare students for employment in the graphic arts and printing industry. Related courses and electives improve students' advancement potential and prepare graduates for additional education leading to a baccalaureate degree.

A graduate of the Graphic Arts program should be able to:

1. recognize the major printing processes, their products, and the advantages of each process.
2. demonstrate the skills needed for entry level jobs (as advanced trainees) in the following areas: layout and design, copy preparation and typesetting, stripping (setting up camera negatives for printing), platemaking (transferring the copy to be printed onto a metal plate for use on a printing press), presswork and finishing operations (collating, binding, cutting, etc.).
3. use technical knowledge of the above processes to make effective job-related decisions.
4. evaluate his/her abilities and limitations in various areas of the graphic arts.
5. demonstrate good work habits: promptness, willingness to work, and the ability to accept supervision.
6. demonstrate knowledge of graphic arts equipment and use appropriate safety precautions when working around such equipment.
7. compare production departments (typesetting and layout, camera, press and bindery) and the contributions each makes to the printed product.
8. identify the problems of owning and operating a business.
9. describe basic chemistry principles and apply them to graphic arts.
10. solve basic mathematical problems related to graphic arts.
11. write clear, concise, legible, and accurate technical reports using standard English.
12. demonstrate skills in verbal communication and speak logically using various types of verbal communication techniques.
13. demonstrate knowledge of the rules and techniques of a lifetime sport which will provide recreation and promote physical fitness.

HUMAN SERVICE (HS)

Associate Degree/2 years

The Human Service program trains students to provide general helping, supportive and preventive services for people with emotional, developmental, social or physical problems. Students develop skills in counseling, crisis intervention, group work and case management. Students apply these general skills in analyzing specific types of agencies and through internships in the field.

Types of Jobs: Entry-level positions in youth and aging programs, senior citizen centers, drug and alcohol counseling programs, child care development agencies, correctional facilities and other agencies.

FIRST SEMESTER		Credits
HSR 111	Introduction to Human Service	3
PSY 111	General Psychology	3
SOC 111	Introduction to Sociology	3
ENL 111	English Composition I	3
BIO 103	Human Anatomy & Physiology Survey	4
		16

SECOND SEMESTER		Credits
HSR 121	Helping Process and Crisis Intervention	3
HSR	Human Service Topical Application*	3
PSY 201	Abnormal Psychology	3
ENL 121	English Composition II	
	or	3
ENL 201	Technical Writing	
PSC 241	State and Local Government	3
PED	Fitness & Lifetime Sports	2
		17

THIRD SEMESTER		Credits
HSR 125	Fundamentals of Counseling	3
HSR 251	Human Service Practicum I**	3
HSR	Human Service Topical Application*	3
SOC 231	Marriage and the Family	3
MTH 101	Introduction to Mathematics I	3
		15

FOURTH SEMESTER		Credits
HSR 240	Management & Administration In Human Services	3
HSR 241	Group Processes	3
HSR 252	Human Service Practicum II**	
	or	3
HSR	Human Services Topical Application	
PSY 203	Developmental Psychology	3
MTH 102	Introduction to Mathematics II	
	or	3
MTH 201	Elementary Statistics I	
		15

*Topical Application Courses will include courses numbered HSR 260 - HSR 279.

**Cooperative Education Practicum credits may be scheduled over the summer, reducing the course load during the third and fourth semesters.

PROGRAM OBJECTIVES

The general objective of the Human Service program is to train students as generalists in the helping professions. Graduates are also prepared for advanced study in social and human service fields.

Graduates of the Human Service program will be able to:

1. provide generic therapeutic, supportive and preventive services for people with emotional, developmental, social or physical problems in a variety of social or human service settings.
2. demonstrate knowledge of social and human service delivery systems and their role within the local and national community.
3. identify and link clients with resources and services provided by local human service agencies.
4. apply systematic procedures to identify problems.
5. provide basic individual and group counseling techniques to address identified problems.
6. serve as a client advocate, facilitating movement of clients through social service systems, within a variety of agency settings.
7. contribute to developing systematic programs for personal change.
8. maintain progress and case notes and write objective, accurate reports.
9. communicate effectively in both writing and speech.
10. listen actively to clients, colleagues and the community.
11. apply mathematical skills to reports, agency budgets, and statistical interpretations.
12. apply principles of psychology, sociology and biology to human issues.
13. understand and respect cultural differences which affect behavior and beliefs.
14. contribute to effective agency planning, budgeting and management.
15. understand the interrelation of physical, social and mental well being, and apply this knowledge.

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INDUSTRIAL DRAFTING (ID)

Certificate/2 years

This program emphasizes the development of drafting skills to prepare students for entry-level jobs in industry. Students will also study related manufacturing processes to improve their understanding of the industrial process and the need for accuracy in drafting. Personal computer and computer-aided drafting competencies will be integrated into the program.

Types of Jobs: Mechanical, sheet metal, piping, civil, structural, architectural or electrical drafting; possible advancement opportunities include related jobs such as estimator or field erection supervisor.

FIRST SEMESTER		Credits
IND 714	Basic Drafting (8 weeks)	5
IND 715	Machine Drafting (8 weeks)	5
ENL 711	Communications	3
MTH 710	Technical Mathematics I	3
		16

SECOND SEMESTER		Credits
IND 724	Gears, Cams, Mechanisms (8 weeks)	5
IND 725	Sheet Metal and Piping (8 weeks)	5
EDT 108	Manufacturing Processes	3
MTH 500	Technical Mathematics II	3
		16

THIRD SEMESTER		Credits
IND 834	Civil Drafting (8 weeks)	5
IND 835	Structural Drafting (8 weeks)	5
PHS 500	Physics Survey	3
	Elective	3
		16

FOURTH SEMESTER		Credits
IND 844	Architectural Drafting (8 weeks)	5
IND 845	Electrical and Electronic Drafting (8 weeks)	5
	Elective	3
		13

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of this program is to prepare students for drafting jobs in industry. Students develop skills in a variety of drafting techniques and take basic academic courses to prepare them for entry-level jobs and for advancement in their field.

A graduate from this program should be able to:

1. draw designs and details using drawing instruments.
2. draft detailed working drawings of machinery and mechanical devices.
3. indicate dimensions and tolerances, fasteners and joining requirements.
4. use computer-aided drafting functions for drawing.
5. draw multiple-view assembly drawings required for the manufacture and repair of mechanisms.
   a. make detail drawings of gears and cams.
   b. select power transmission parts from manufacturer's catalogs.
6. draw plans and details for structures using structural reinforcing steel, concrete, masonry, and other structural materials.
7. prepare plans and details of foundations, building frames, floor and roof framing and other structural elements.
8. draw electrical equipment, working drawings and wiring diagrams used by construction crews and repairpersons who install electrical equipment and wiring in power plants, communications centers, industrial establishments, stores, homes, and electrical distribution centers.
9. draw architectural and structural features of buildings and other structures.
10. calculate quality, quantity, strength, and total cost of materials; assure that the planned structure will meet building codes.
11. prepare complete, accurate scale drawings of sheet metal parts and equipment used in the construction and repair of material conveyance equipment.
12. draw piping plans and elevations with ability to estimate and draw "takeoffs".
13. use civil engineer's field notes showing metes and bounds, cross sections, and cuts and fills to prepare drawings.
14. apply engineering data to drawings using mathematical calculations and basic laws of physics.
15. write accurate technical reports using standard English.
16. demonstrate a responsible attitude toward mechanical drafting and a cooperative spirit toward each person associated with this work.
17. demonstrate fundamental skills and knowledge in the use of computer-aided drafting (CAD).
18. perform basic drawing functions on computer-aided drafting equipment.

JOURNALISM (JO)

Associate Degree/2 years

Practical courses in news and feature article writing, public relations, law and the mass media, copy editing, media photography, media management and community responsibility offer students a well-rounded foundation in journalism. Essential related studies in government, economics, sociology, psychology and specific areas of English are included. The program prepares students for a variety of entry-level jobs in journalism and related fields.

Types of Jobs: Newspaper reporter, newspaper research assistant, news photographer, editorial assistant, advertising copywriter, advertising photographer, advertising layout assistant, public relations assistant, public relations photographer, magazine researcher, production person.

Recommended High School Subjects: To succeed in this program, students should have completed the following sequences in high school: English, including grammar, composition, and literature; social studies and/or history, and basic mathematics. Successful completion of high school journalism or participation in the production of a high school publication will contribute to the student's success at the college level.

FIRST SEMESTER		Credits
JOU 111	News Writing	3
JOU 114	Mass Media Photography	3
MCM 111	Introduction to Mass Communications	3
ENL 111	English Composition I	3
SEC 509	Typewriting or passing score on typing test	1
PSC 231	American Government - National	3
		16

SECOND SEMESTER		Credits
JOU 121	Reporting Public Affairs	3
JOU 122	Introduction to Newspaper Production	2
MCM 122	Media and the Law	3
ENL 121	English Composition II	3
PSC 241	State and Local Government	3
PED	Fitness & Lifetime Sports	1
		15

THIRD SEMESTER		Credits
JOU 231	Feature Writing	3
JOU 232	Copyreading and Editing	3
JOU 233	Newspaper Management and Production	2
ECO 201	Principles of Economics	3
ENL 202	Fundamentals of Speech	3
PED	Fitness & Lifetime Sports	1
		15

FOURTH SEMESTER		Credits
JOU 244	Publication Management*	2
MCM 242	Media Management & Community Responsibility	3
MCM 243	Public Relations	3
ADV 101	Advertising	3
PSY 111	General Psychology or	3
SOC 111	Introduction to Sociology	
	Elective-Math or Science**	3
		17

*Cooperative Education experience approved by the Division Director may be substituted.

**100 or 200-level course in biology, chemistry, environmental science, geography, geology, mathematics, or physics.

PROGRAM OBJECTIVES

The general objective of the Journalism program is to prepare students for employment in small or mid-size organizations in journalism and related fields.

Graduates of the Journalism program will be able to:

1. evaluate their role as individual citizens in a community as well as their unique importance as trained mass media persons with the potential to influence the lives of others in the community.
2. analyze the responsibilities of the mass media in the United States.
3. state ethical canons and governmental regulations or laws which govern the production of mass media; correlate personal responsibility and those laws and canons.
4. distinguish the philosophical and practical standards and goals of various forms of mass media.
5. explain examples of the impact of mass media upon the history of the United States and upon society.
6. use modern mass media copy production systems such as video display terminals.
7. interview, research, and otherwise gather information needed to write specialized material—including basic news stories, feature stories, in-depth reports, reviews, public relations news releases and comprehensive reports, such as annual reports—for mass media publication.
8. list the interrelationships between mass media and various types of communities, i.e., geographic, company, etc.
9. produce basic photographic assignments for use in various forms of mass media, as well as in public relations media.
10. differentiate, by statement or example, among the types of photographs used for news, advertising, internal public relations, external public relations, and formal reports.
11. list differences in objectives and techniques of writing for various forms of mass media, including newspapers, magazines, annual reports, trade journals, house organs, etc.
12. coordinate, organize and produce examples of club bulletins, house organs, employee newsletters and similar small publications.
13. produce preliminary advertising copy and layouts for small publications or a small advertising agency.
14. list individual goals of and delineate differences among various forms of writing—including the objective, the subjective, biased, persuasive and propagandized.
15. explain the relationship among various forms of mass media in terms of philosophical goals balanced by consideration of business practices.
16. delineate the roles of individuals in the organizational structure of various forms of mass media; provide examples demonstrating the interrelationships of those individuals.
17. state and provide examples of effective management practices peculiar to various forms of mass media.

LANDSCAPE NURSERY TECHNOLOGY (NM)

Associate Degree/2 years

Nursery Management offers rewarding careers to those who enjoy working in the outdoors. This program prepares students for the job opportunities available to college graduates in this growing industry. Students study nursery production, garden center sales, and landscape design, installation and maintenance. The operation of landscape and nursery equipment, and the construction of landscape features—including walks, walls and patios—are covered in labs.

Types of Jobs: Propagation and production of trees and shrubs in field or container nurseries; nursery stock buyer; agent or salesperson; garden center sales; horticulturist with a government agency (city, state, federal), landscaping, turfgrass installation and maintenance; starting your own business.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER		Credits
BIO 111	Basic Botany	3
HRT 110	Soils & Fertilizers	3
HRT 111	Ornamental Plants	2
HRT 112	Horticulture Operations & Structures	3
ENL 111	English Composition I	3
MTH 710	Technical Mathematics I	3
		17

SECOND SEMESTER		Credits
HRT 120	Bedding Plant Production	3
HRT 121	Landscape Plants	3
CSC 104	Microcomputer Fundamentals	1
ENL 202	Fundamentals of Speech	3
MGT 110	Principles of Businesss	3
ACC 112	Accounting I	3
PED	Fitness & Lifetime Sports	1
		17

THIRD SEMESTER		Credits
HRT 214	Nursery Crop Production	3
HRT 215	Landscape Plants & Design Applications	3
HRT 210	Plant Propagation	3
HRT 239	Plant Insects & Diseases	3
HRT 216	Turf Management	3
PED	Fitness & Lifetime Sports	1
		16

FOURTH SEMESTER		Credits
HRT 224	Landscape Construction	3
HRT 226	Landscape Management	3
HRT 225	Landscape Design	3
HRT 220	Horticulture Mechanics	3
	*Elective—Social Science/Humanities	3
		15

*MGT 248 — Supervision & Human Relations - recommended but not required.

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The goal of Nursery Management is to prepare students for employment or self-employment in such jobs as growing nursery crops, retail and garden center sales, and landscape work.

A graduate of Nursery Management should be able to:

1. apply basic knowledge of botany, chemistry, and horticulture soils to plant growth and culture.
2. identify the skills needed to organize thoughts and ideas and communicate, verbally and in writing, in a manner that can be easily understood.
3. solve math problems related to the use of soil amendments, fertilizers, and plant growth control chemicals, and apply cost estimating, pricing, and record-keeping techniques.
4. identify deciduous trees and shrubs, narrow and broad-leaved evergreens, cultivars, and varieties by botanical and common name and point out their distinguishing characteristics, landscape uses and applications.
5. identify various annuals, biennials, and perennial herbaceous plants, and summarize landscape, garden center, and greenhouse use and the growth requirements of these plants.
6. describe the various types of nurseries, nursery growing structures, related facilities, equipment, and handtools and define the proper location for and the design factors of nursery facilities.
7. demonstrate the ability to grow commercial plants in field and container operations on a scheduled production basis.
8. identify and describe the effect of insects, diseases, and physiological problems on plants, plan for proper control of these problems, and obtain the Pennsylvania Private Applicator's License.
9. select the proper procedures, define the physiological basis and describe practical applications of the reproduction of plants by sexual and asexual methods.
10. explain the proper and effective use of woody and herbaceous plant materials in developing public and domestic landscape areas.
11. create landscape features such as waterfalls, pools, steps, walks, walls, and patios using materials like flagstone, brick, railroad ties and mountain stone.
12. identify turfgrass varieties and uses, and demonstrate an understanding of the establishment and maintenance of turf areas.
13. apply skills in pruning, fertilizing, and spraying in maintaining existing landscapes, fruit trees and other fruitbearing plants.
14. demonstrate knowledge of the operation and repair of equipment and mechanical systems used in the nursery industry.
15. demonstrate a responsible attitude in relationships with employers, fellow employees, and the world of work.
16. demonstrate an appreciation of physical fitness and lifelong recreational activities.

MACHINIST GENERAL (MG)

Certificate/2 years

This program offers training on machine tools commonly used in most shops. It emphasizes practical machine skills. Classroom analysis of various jobs and machine operations increases the student's capabilities as a machinist. General mathematics, science, and communications skills are included to prepare students to work with technical advances in the machining industry.

Types of Jobs: Machinist, machine repair mechanic, setup person for production line work, skilled toolroom mechanic, technical sales, manufacturing supervision, or machine shop ownership.

FIRST SEMESTER		Credits
MTT 110	Machining I	5
MTT 115	Machining II	5
MTH 710	Technical Mathematics I	3
		13

SECOND SEMESTER		Credits
MTT 120	Machining Processes	5
MTT 125	Metrology/Quality Control	5
CIM 101	Basic Machine Tool Programming	3
MTH 500	Technical Mathematics II	3
		16

THIRD SEMESTER		Credits
MTT 210	Tool Technology	5
CIM 121	NC/CNC Programming	3
CIM 122	NC/CNC Machine Operations	4
PHS 500	Physics Survey	3
ENL 711	Communications	3
		18

FOURTH SEMESTER		Credits
CIM 201	Grinding/Heat Treatment	5
CIM 203	Special Processes	2
CIM 204	Tooling	3
EDT 101	Mechanical Drawing	2
	Elective or Approved Co-op	3
		15

Co-op Options:
Alternating
Parallel
Summer

PROGRAM OBJECTIVES

The overall objective of this program is to prepare students for jobs in the machining industry. A graduate of the Machinist General program should be able to:

1. demonstrate safe work habits and be conscious of safety when operating machine tools and equipment.
2. demonstrate working knowledge of blueprint reading; work from sketches of parts.

3. develop and use mathematical formulas to compute coordinates and solve gearing and threading problems.
4. apply basic knowledge of physics-mechanics to machine tool problems such as power transmission, machining, etc.
5. operate and set up basic machine tools.
6. operate machine tools to produce gears, threads, and gages.
7. operate and set up numerically controlled machines, electrical discharge, and electrical chemical machines.
8. operate various types of abrasive cutting machines and practice heat treating of metals, for example, hardening, annealing, and carburizing.
9. prepare and revise technical papers used in operating machine tools and machining procedure.

OCCUPATIONAL THERAPY ASSISTANT (OC)

Associate Degree/2 years

The Occupational Therapy Assistant program prepares the student to become a certified occupational therapy assistant. Occupational therapy assistants work in a variety of settings serving individuals with physical, psycho-social or developmental disorders. They work to promote, reinforce, restore or maintain health through the use of purposeful activity. Students receive extensive training in physical and psycho-social disorders, the dynamics of activity and its application in occupational therapy settings. They will participate in community service experiences as an integral part of the program as well as complete at least 12 weeks of clinical affiliation, full-time, upon successful completion of their course work.

The Occupational Therapy Assistant program is designed to meet the essentials for an approved educational program for the Occupational Therapy Assistant. Approval for the program will be sought from the American Occupational Therapy Association (AOTA) well in advance of the graduation of the first class.

Students must earn a minimum grade of "C" in each aspect of their occupational therapy courses and others prescribed by the curriculum. Failure to do so will result in termination from the program.

Types of Jobs: Certified occupational therapy assistants work in highly diversified settings. Examples include: hospitals, rehabilitation centers, nursing homes, home health agencies, community mental health centers and inpatient psychiatric units, vocational rehabilitation programs, sheltered workshops, drug and alcohol programs, prison systems, adult day care centers, schools for handicapped children and the mentally retarded and public school systems.

Recommended High School Subjects and Admission Requirements: All deficiencies during college placement tests must be remediated prior to entry into the program. All students will be interviewed and should have a minimum of a "C" average in high school classes, including biology and algebra. SAT tests are required for admission.

FIRST SEMESTER		Credits
BIO 115	Human Anatomy and Physiology I	4
ENL 111	English Composition I	3
PSY 111	General Psychology	3
OCT 100	Foundations of Occupational Therapy	3
OCT 101	Human Occupations	2
BCT 116	Basic Woodworking	2
		17

SECOND SEMESTER		Credits
BIO 125	Human Anatomy and Physiology II	4
ENL 201	Technical Writing	3
PSY 203	Developmental Psychology	3
OCT 120	Developmental Habilitation	5
PED	Fitness & Lifetime Sports	2
		17

THIRD SEMESTER		Credits
PSY 201	Abnormal Psychology	3
SOC 111	Introduction to Sociology	3
OCT 200	Physical/Social Rehabilitation	4
OCT 201	Physical/Social Rehabilitation Methods	2
MTH 201	Elementary Statistics	3
		15

FOURTH SEMESTER		Credits
ENL 202	Fundamentals of Speech	3
OCT 220	Psychosocial Rehabilitation	4
OCT 221	Psychosocial Rehabilitation Methods	2
OCT 222	OT Management	2
	Specified Elective*	3
		14

*Suggested in area of OT media, science, social/behavioral sciences, or computer literacy. Consultation with advisor is mandatory.

SUMMER		Credits
OCT 250	Level II Fieldwork	6

Following the completion of course work, students will participate in two field work experiences for at least six weeks each. Students will be responsible for room & board as well as transportation. Arrangements will be made by the department.

PROGRAM OBJECTIVES

Upon completion of the Occupational Therapy Assistant program, graduates will possess the knowledge, skills and attitudes to effectively perform those C.O.T.A. roles defined in the *Entry-Level Role Deliniation for OTR and COTA's* as approved by the Representative Assembly, AOTA, March 1981.

A graduate of the program will be able to:

1. define occupational therapy and the occupational therapy process.
2. describe and discuss the diversity of health care systems and the role of occupational therapy in traditional and non-traditional settings.
3. differentiate between the roles of registered occupational therapist, certified occupational therapist, and occupational therapy assistant.
4. demonstrate maturity and professionalism in dealing with clients/patients.
5. conceptualize the importance of purposeful occupation as a health determinant.
6. describe and discuss the holistic nature of activity and occupational performance.
7. discuss positive as well as adverse effects on occupational performance throughout the lifespan.
8. analyze activity for its therapeutic value and performance components.
9. define the health-illness-health continuum.
10. describe the pathology of selected physical, psycho-social or developmental dysfunction.
11. describe and develop proficiency in using assessment skills for individuals with physical, psycho-social or developmental dysfunction.
12. demonstrate insight into goal setting and program development for individuals with physical, psycho-social or developmental dysfunction.
13. practice a working knowledge of a variety of media and therapeutic techniques used in occupational therapy settings.
14. display competence in instruction and application of selected media/therapeutic techniques.
15. define safety techniques/hazards of selected occupational therapy media and techniques.
16. utilize adaptive measures and creative problem-solving techniques.
17. conceptualize and practice the notion of therapeutic use of self.
18. define selected medical terminology.
19. communicate orally and in writing, results of assessment and treatment.
20. define procedures for service management in occupational therapy settings.

OUTDOOR POWER EQUIPMENT (SM)

Certificate/1 year

Outdoor Power Equipment prepares students to troubleshoot, service and repair power systems used in small engines and recreational vehicles. The program covers two and four-stroke cycle gasoline and small diesel engines. Students also learn to repair transmissions and drive systems commonly used in outdoor power equipment and recreational vehicles.

Types of Jobs: Motorcycle repairer (mechanic), motorcyle tester, engine repairer, gas engine repairer, power saw mechanic, small engine mechanic, outboard motor mechanic, outboard motor tester, lawnmower mechanic, factory service technician.

FIRST SEMESTER		Credits
OPE 710	Small Engine Fundamentals (8 weeks)	5
OPE 711	Drive Units and Systems (8 weeks)	5
MTH 710	Technical Mathematics I	3
WEL 100	Introduction to Welding Processes	3
		16

SECOND SEMESTER		Credits
OPE 721	Operation, Repair and Maintenance (8 weeks)	5
OPE 722	Shop Operation and Customer Relations (8 weeks)	5
ENL 711	Communications	3
	Elective	3/4
		16/17

PROGRAM OBJECTIVES

The objective of this program is to prepare students for employment in the field of outdoor power equipment.

Graduates of Outdoor Power Equipment should be able to:

1. safely and correctly use and care for the tools of the trade.
2. explain the principles of operation of two and four-stroke cycle engines.
3. troubleshoot, repair and service most types of small engines.
4. repair and service most types of transmissions and drive systems common to outdoor power equipment and recreational vehicles.
5. operate and repair most types of outdoor power equipment and recreational vehicles.
6. read and use parts books and service manuals and understand their contents.
7. look and conduct themselves in a manner leading to positive employee-employer and employee-customer relations.
8. demonstrate the ability to manage or operate a repair shop using correct bookkeeping, inventory control and warranty procedures.
9. perform basic welding, cutting and brazing tasks using electric arc and oxyacetylene equipment.
10. write clear, concise, legible and accurate technical reports, warranty forms, shop repair orders, etc.
11. solve basic mathematical problems.

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PLUMBING & HEATING (PL)

Certificate/2 years

This program includes the basic theories of plumbing and heating, soil waste and vent layout, household and industrial maintenance, sewage systems, and the use of hand and power tools. Students develop skills in all types of plumbing and heating repair work used in residential, institutional, and commercial applications. The program also provides training in the fundamentals of communication and mathematics.

Types of Jobs: Plumbing and heating installation, industrial maintenance, public utilities service, machine work and shipbuilding industries.

FIRST SEMESTER		Credits
PLH 711	Basic Plumbing (First 8 weeks)	6
PLH 712	Advanced Plumbing Skills (Second 8 weeks)	6
BCT 254	Carpentry for the Trades	2
MTH 710	Technical Mathematics I	3
		17

SECOND SEMESTER		Credits
PLH 721	Plumbing Systems and Blueprints (First 8 weeks)	6
PLH 722	Advanced Systems and Codes (Second 8 weeks)	6
WEL 703	Electric Welding	2
ENL 711	Communications	3
		17

THIRD SEMESTER		Credits
PLH 833	Heat Loss Calculations - Pipe Welding (First 8 weeks)	7
PLH 832	Hot Water Heat - Heat Conservation (Second 8 weeks)	6
ELT 110	Electricity for the Trades	3
	Optional Elective	0/3
		16/19

FOURTH SEMESTER		Credits
PLH 841	Steam Heat and Pipefitting (First 8 weeks)	6
PLH 842	Field Work and Advanced Skills (Second 8 weeks	6
	Optional Elective	0/3
		12/15

Co-op Options
- Alternating
- Parallel
- Summer

PROGRAM OBJECTIVES

The goal of the Plumbing and Heating program is to prepare students for entry-level jobs in plumbing and heating.

The graduate of the Plumbing and Heating program should be able to:

1. demonstrate good work habits and meet accepted safety standards.
2. use hand and power tools of the trade.
3. identify piping materials and install them using proper connections.
4. use and apply trade terms and technical data.
5. read and interpret blueprints, specifications, and codes as they apply to the trade.
6. lay out, estimate, calculate, and use mathematical skills required in the trade.
7. install, maintain, and repair plumbing and heating mechanical systems and equipment and keep up with new developments in the field.
8. demonstrate the ability to write letters of application, memos, work orders, and reports, and apply communication skills on the job.
9. demonstrate welding skills required in plumbing and heating.
10. apply basic knowledge and skills of electrical work to install, repair, maintain, and troubleshoot electrical controls used in plumbing and heating.
11. identify the principles involved in the collection, storage and use of solar energy for space and domestic water heating.
12. apply energy conservation measures to plumbing and heating installations.

PRACTICAL NURSING (NU)

Certificate/3 semesters

This three-semester program is designed to prepare students to enter the field of practical nursing, or to continue their education at the baccalaureate level. Classroom instruction in theory and basic skills is given on campus; practical experience in actual client-care settings is obtained at local hospitals and nursing homes. Students enrolling at the Wiliamsport campus gain practical experience at the Williamsport Hospital, Divine Providence Hospital, and at the Lysock View Home and Hospital. Wellsboro students acquire experience at Soldiers and Sailors Memorial Hospital and the Green Home. Under the guidance of college instructors at the cooperating agencies, students gain experience in the care of clients of all ages.

Students enrolled in this program must earn a minimum final grade of "C" in each of their nursing courses. Failure to do so will result in termination from the program. Students interested in continuing their education at the baccalaureate level are advised to complete a fourth semester at the College. Fourth semester courses should be selected based on the requirements of the Bachelor of Science in Nursing program they plan to pursue, and might include chemistry, microbiology, sociology, statistics, English Composition II, psychology, and fitness and lifetime sports. Students interested in the Practical Nursing program must also meet special admission requirements by taking the Pennslylvania State Board test and having a personal interview.

Types of Jobs: Employment in hospitals, convalescent homes, visiting nurses associations, home health care, doctor's and dentist's offices and private care.
Recommended High School Subjects: Four units of high school English, three units of social studies, two units of mathematics (one of which is algebra), and two units of science with a related laboratory.

FIRST SEMESTER		Credits
NUR 101	Fundamentals of Nursing	12
BIO 115	Human Anatomy & Physiology	4
ENL 111	English Composition I	3
		19

SECOND SEMESTER		Credits
NUR 201	Nursing Care of Adult & Child I	14
BIO 125	Human Anatomy & Physiology II	4
PSY 111	General Psychology	3
		21

THIRD SEMESTER		Credits
NUR 301	Nursing Care of Adult & Child II	16
	Elective*	3
		19

*Recommended Elective: Introduction to Microcomputers or Developmental Psychology.

Theory – 624 Hours, 2/5 Ratio
Practicum – 912 Hours, 3/5 Ratio
Total 1536 Hours

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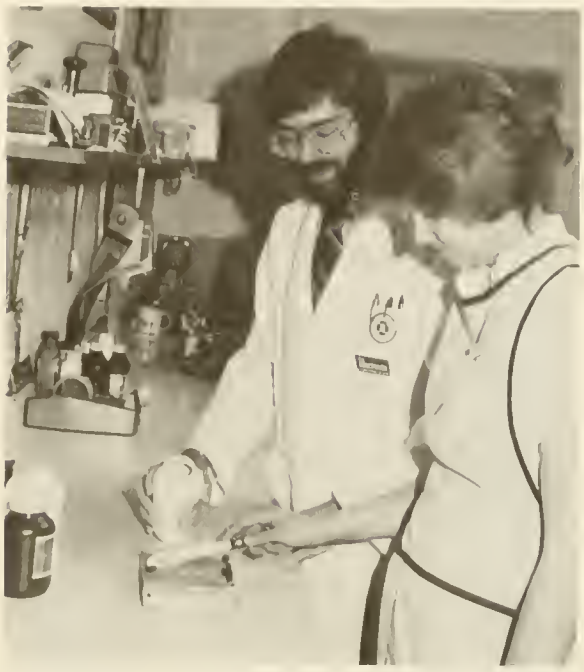


PROGRAM OBJECTIVES

A graduate of the Practical Nursing program will be able to share in the care of the sick, in rehabilitation, and in the prevention of illness—always under the direction of a licensed physician and/or registered professional nurse. The fundamental aim of the program is to prepare a graduate who is eligible for licensure as a practical nurse. The secondary purpose is to prepare the graduate to transfer into an associate degree or baccalaureate nursing program or other health-related field of study.

At the completion of the Practical Nursing program, the graduate should be able to:

1. use—under supervision—scientific knowledge and skills necessary to plan and provide safe and comprehensive client-centered nursing care in all settings where practical nursing takes place.
2. provide nursing care that reflects accurate assessments of the client's growth and development.
3. use problem-solving approaches in administering nursing care.
4. use effective communication skills.
5. assist the registered nurse in the care of the acutely ill client.
6. demonstrate knowledge of the role of community health agencies in meeting health needs of society.
7. demonstrate an acceptable code of legal/ethical behavior according to standards set by health care delivery agencies.
8. recognize and accept responsibility for continuing education.
9. meet eligibility requirements needed to take the state Board of Nursing Examination necessary for licensure.

PRINTING (GP)

Certificate/2 years

This program provides practical skills training in all printing operations. Students learn to set type, to paste-up type, to operate cameras and printing presses. Finishing operations—collating, binding, and cutting—are also covered.

Types of Jobs: Camera work, stripper, layout work, compositor, platemaking, and press work.

FIRST SEMESTER		Credits
GCO 511	Layout and Design	4
GCO 512	Typographic Composition	4
ENL 711	Communications	3
MTH 710	Technical Mathematics I	3
SEC 509	Typewriting	1
		15

SECOND SEMESTER		Credits
GCO 521	Process Camera	4
GCO 522	Film Assembly and Imposition	4
MGT 247	Small Business Management	3
MTH 500	Technical Mathematics II	3
	Elective	3
		17

THIRD SEMESTER		Credits
GCO 631	Platemaking, Substrates & Finishing	4
GCO 632	Press Operations	4
GCO 635	Printing Estimating Practices	3
CHM 109	Chemistry for Graphic Arts	3
	Elective	3
		17

FOURTH SEMESTER		Credits
GCO 641	Advanced Typographic Composition	3
GCO 642	Advanced Process Camera and Stripping	3
GCO 645	Printing Processes	3
CSC 118	Fundamentals of Computer Science	3
		12

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the Printing program is to prepare students for employment in the printing industry.

A graduate of the Printing program should be able to:

1. recognize the major printing processes, their products, and the advantages of each process.
2. demonstrate the skills needed for entry-level jobs (as advanced trainees) in the following areas: layout and design, copy preparation and typesetting, stripping (setting up camera negatives for printing), platemaking (transferring copy to be printed onto a metal plate for use on a printing press), presswork and finishing operations (collating, binding, cutting, etc.).
3. evaluate his/her abilities and limitations in various areas of the graphic arts.
4. demonstrate good work habits: promptness, willingness to work, and the ability to accept supervision.
5. demonstrate knowledge of equipment and use appropriate safety precautions when working around such equipment.
6. compare production departments (typesetting and layout, camera, press and bindery) and the contributions each makes to the final product.
7. write clear, concise, legible, and accurate technical reports using standard English.
8. demonstrate skill in basic verbal communications.
9. solve basic math problems related to printing operations.

new

QUANTITY FOOD PRODUCTION AND SERVICE (QF)

Certificate/1 year

Quantity Foods is designed to prepare students for a variety of careers in the food industry. The program covers the essentials of food preparation with the emphasis on theoretical preparation, basic skills and hands-on experience.

Types of Jobs: Short order cook, sous chef, kitchen worker, salad preparation and cold buffet cook, waiter, waitress, bus person, hostess, cashier.

Recommended High School Subjects: High school courses in home economics with an emphasis on food preparation would be helpful, but are not required.

FIRST SEMESTER		Credits
QFP 510	Introduction to Food Service (8 weeks)	3
QFP 511	Salads, Soups and Sandwich Preparation (8 weeks)	4
QFP 520	Management and Production Techniques (8 weeks)	3
QFP 521	Desserts, Sauces and Meat Preparation (8 weeks)	4
MTH 710	Technical Mathematics I	3
		17

SECOND SEMESTER		Credits
QFP 530	Techniques of Food Production (8 weeks)	3
QFP 531	Starches and Entree Production (8 weeks)	4
QFP 540	Advanced Techniques of Food Production and Service (8 weeks)	3
QFP 541	Short Order Preparation (8 weeks)	4
ENL 711	Communications	3
		17

PROGRAM OBJECTIVES

The general objective of the Quantity Foods program is to prepare students for jobs in the quantity foods industry and to provide the background needed for advanced training—either on-the-job or at the college level.

Graduates should be able to:

1. understand and practice high levels of sanitation and safety.
2. use small equipment safely and quickly.
3. read recipes, measure and portion correctly.
4. operate and clean large equipment typical of a commercial kitchen.
5. practice methods of work simplification and accurately time food preparation.
6. purchase, store and handle foods correctly.
7. prepare and artfully present a variety of foods typical of restaurant and institutional food service.
8. work cooperatively with kitchen personnel.
9. perform front-of-the house duties with ease.
10. demonstrate awareness of job opportunities in the food service industry.

11. demonstrate awareness of good nutritional guidelines and practices for conserving nutrition.
12. apply knowledge of mathematics in determining recipe adjustments, in food cost accounting, and in front-of-the-house accounting.
13. demonstrate the ability to write letters of application, memos, purchase orders and reports, and apply communication skills on the job.

OK

RADIOGRAPHY (RT)

Associate Degree/2 years

This program includes courses in anatomy, physiology, physics, medical terminology and professional ethics, in radiologic equipment and safety, and in English and mathematics. Practical experience with sick and injured patients—under qualified technical supervision in cooperating local hospitals—is an important aspect of the program. Internships in affiliated hospitals—required to meet eligibility requirements for registry exams—are scheduled during the summer.

This program must be completed within 24 consecutive months. Approximately 2300 practicum hours are included to qualify students to take the registry examination. Special admission requirements include SAT test scores and a personal interview.

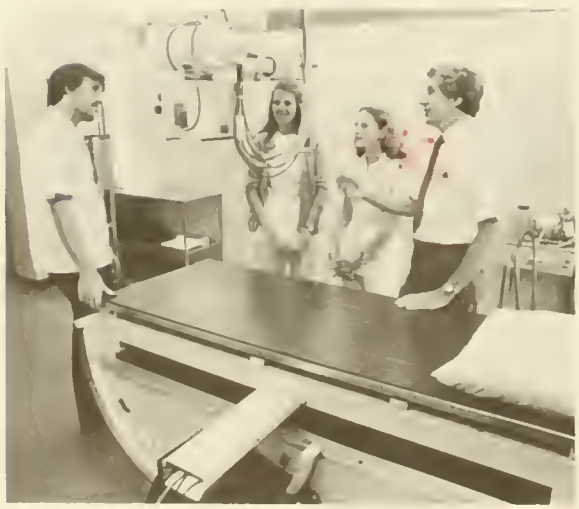
Types of Jobs: Hospital facilities, doctors and radiologists in private practice, civilian and military government agencies, industry.
Recommended High School Subjects: Two years of algebra.

FIRST SEMESTER		Credits
RAD 110	Radiologic Technology I	5
BIO 115	Human Anatomy and Physiology I	4
MTR 101	Medical Terminology I	3
ENL 111	English Composition I	3
MTH 103	College Algebra & Trigonometry I	3
		18

SECOND SEMESTER		Credits
RAD 120	Radiologic Technology II	7
BIO 125	Human Anatomy and Physiology II	4
PHS 112	Introductory Physics	4
MTH 104	College Algebra & Trigonometry II	3
		18

SUMMER		Credits
RAD 201	Summer Internship	1

THIRD SEMESTER		Credits
RAD 230	Radiologic Technology III	10
PHS 122	Radiation Physics	3
	Elective-Psychology*	3
		16



FOURTH SEMESTER		Credits
RAD 240	Radiologic Technology IV	10
ENL 121	English Composition II	3
SOC 111	Introduction to Sociology	3
		16

SUMMER		Credits
RAD 202	Summer Internship	1

*Psychology Electives:

PSY 111	General Psychology	3
PSY 201	Abnormal Psychology	3
PSY 241	Social Psychology	3

NOTE: Radiography students are exempted from the College's required Fitness & Lifetime Sports courses.

PROGRAM OBJECTIVES

The general program objective is to provide students with academic and practical experiences to prepare them to pass the National Radiological Technology Registry Examination and to qualify for employment as registered radiographers.

Upon completion of the two-year Radiography program students should be able to:

1. apply knowledge acquired in radiation protection courses in the clinic—as it applies to patients, him or herself, and others.
2. use knowledge of anatomy, positioning, and radiographic techniques to accurately show anatomical structures on a radiograph.
3. determine exposure factors needed to produce the best radiographs possible with minimum radiation exposure to the patient.
4. recognize differences between diagnostic quality and inferior radiographs.
5. exercise discretion and good judgment in all aspects of work.
6. provide for the physical and emotional needs of the patient.
7. recognize patient emergencies and initiate lifesaving first aid.
8. apply knowledge of mathematics in determining exposure factors.
9. use effective communication skills.
10. use correct medical and anatomical terminology in radiography work.
11. apply the necessary knowledge of basic electronics and physics to radiographic work.

new from Divine Prov.

RETAIL MANAGEMENT (RM)

Associate Degree/2 years

This program provides a strong background in marketing, merchandising, retailing, and related business fields.

Types of Jobs: Retailers, buyers, wholesalers, purchasing agents, sales managers, salespersons, salesworkers, marketing managers, distribution managers.

FIRST SEMESTER		Credits
ACC 112	Accounting I	3
MGT 110	Principles of Business	3
MGT 111	Business Mathematics	3
SEC 111	Typewriting I	3
ENL 111	English Composition I	3
PED	Fitness & Lifetime Sports	1
		16

SECOND SEMESTER		Credits
ECO 201	Principles of Economics	3
MGT 230	Business Communications	3
MGT 231	Business Law I	3
MKT 233	Retail Principles	3
ENL 202	Fundamentals of Speech	3
PED	Fitness & Lifetime Sports	1
		16

THIRD SEMESTER		Credits
MKT 243	Sales	3
MKT 247	Retail Management	3
CSC 118	Fundamentals of Computer Science	3
MKT 240	Marketing	3
	Elective or Approved Co-op	3
		15

FOURTH SEMESTER		Credits
ADV 101	Advertising	3
MGT 248	Supervision & Human Relations	3
MKT 245	Fashion Merchandising and Display	4
	Elective-Social Science/Humanities	3
	Elective	3
		16

Co-op Options:
Parallel
Summer

EVENING PROGRAM

Courses required for the associate degree in Retail Management are also offered in the evenings for the convenience of students who are unable to attend classes during the day. Students may complete all courses required for a degree in Retail Management by enrolling in evening courses on a part-time basis. Part-time students may require more than two years to complete the program.

OK

PROGRAM OBJECTIVES

The general goal of the Retail Management program is to prepare graduates for middle management level jobs in the private sector of the retail and/or wholesale field. The program will also upgrade the skills of those now employed in the field.

The graduate should be able to:

1. review and evaluate the administrative processes and policies for marketing and retail merchandising.
2. evaluate customer behavior and motivation as it applies to a profitable enterprise.
3. develop advertising campaigns using the media that is most effective in terms of cost, consumer appeal, and desired results.
4. explain the steps involved in identifying and segmenting a market.
5. relate in a positive manner to supervisors, peers, and subordinates.
6. demonstrate skills in effective verbal and written communications.
7. apply analytical techniques in preparing financial statements and inventory systems.
8. demonstrate general knowledge of electronic data processing, point of sale equipment and microcomputer applications.
9. identify the laws affecting business.
10. identify the need for physical fitness and positive leisure activities.

SECRETARIAL OFFICE ADMINISTRATION (SA) (Executive)

Associate Degree/2 years

This program provides skills in typing, shorthand, word processing, and general office practice. Courses in accounting, business, microcomputers and liberal studies are included in the program.

Types of Jobs: Business, commerce, government, industry, or the professions.

FIRST SEMESTER		Credits
MGT 230	Business Communications	3
MGT 111	Business Mathematics	3
SEC 111	Typewriting I	3
SEC 114	Shorthand I	3
ENL 111	English Composition I	3
PED	Fitness & Lifetime Sports	1
		16

SECOND SEMESTER		Credits
ACC 112	Accounting I	3
SEC 121	Typewriting II	3
SEC 124	Shorthand II	3
SEC 125	Secretarial and Administrative Procedures	3
	Elective-Social Science/Humanities	3
PED	Fitness & Lifetime Sports	1
		16

THIRD SEMESTER		Credits
SEC 231	Typewriting III	3
SEC 236	Specialized Terminology and Transcription	3
MGT 110	Principles of Business	3
WDP 121	Word Processing I	3
CSC 104	Microcomputer Fundamentals	1
ENL 202	Fundamentals of Speech	3
		16

FOURTH SEMESTER		Credits
SEC 246	Secretarial Microtranscription	3
SEC 247	Secretarial Office Simulation	3
SEC 242	Professional Internship	2
MGT 248	Supervision and Human Relations	3
CSC	Microcomputer Elective*	1
	Elective	3
		15

*CSC 105 is not acceptable.

Co-op Options:
Parallel
Summer

SECRETARIAL OFFICE ADMINISTRATION (SA) (Legal)

Associate Degree/2 years

This program provides skills in typing, shorthand, word processing, and general office practice. Courses in business law, microcomputers and liberal studies are included in the program.

Types of Jobs: Business, commerce, government, and law.

FIRST SEMESTER		Credits
MGT 230	Business Communications	3
MGT 111	Business Mathematics	3
SEC 111	Typewriting I	3
SEC 114	Shorthand I	3
ENL 111	English Composition I	3
PED	Fitness & Lifetime Sports	1
		16

SECOND SEMESTER		Credits
ACC 112	Accounting I	3
SEC 121	Typewriting II	3
SEC 124	Shorthand II	3
SEC 125	Secretarial and Administrative Procedures	3
	Elective-Social Science/Humanities	3
PED	Fitness & Lifetime Sports	1
		16

THIRD SEMESTER		Credits
SEC 231	Typewriting III	3
SEC 236	Specialized Terminology and Transcription	3
ENL 202	Fundamentals of Speech	3
MGT 231	Business Law I	3
WDP 121	Word Processing I	3
CSC 104	Microcomputer Fundamentals	1
		16

FOURTH SEMESTER		Credits
SEC 246	Secretarial Microtranscription	3
SEC 247	Secretarial Office Simulation	3
SEC 242	Professional Internship	2
MGT 241	Business Law II	3
CSC	Microcomputer Elective*	1
	Elective	3
		15

*CSC 105 is not acceptable.

Co-op Options:
Parallel
Summer

SECRETARIAL OFFICE ADMINISTRATION (SA) (Medical)

Associate Degree/2 years

This program provides skills in typing, shorthand, word processing, and general office practice. Courses in biology, medical terminology, microcomputers and liberal studies are included in the program.

Types of Jobs: Doctors, dentists, hospitals, and various health occupation offices.

FIRST SEMESTER		Credits
MGT 230	Business Communications	3
MGT 111	Business Mathematics	3
SEC 111	Typewriting I	3
SEC 114	Shorthand I	3
ENL 111	English Composition I	3
PED	Fitness & Lifetime Sports	1
		16

SECOND SEMESTER		Credits
ACC 112	Accounting I	3
SEC 121	Typewriting II	3
SEC 124	Shorthand II	3
SEC 125	Secretarial and Administrative Procedures	3
BIO 103	Human Anatomy & Physiology Survey	4
PED	Fitness & Lifetime Sports	1
		17

THIRD SEMESTER		Credits
SEC 231	Typewriting III	3
SEC 236	Specialized Terminology and Transcription	3
MTR 101	Medical Terminology I	3
WDP 121	Word Processing I	3
CSC 104	Microcomputer Fundamentals	1
ENL 202	Fundamentals of Speech	3
		16

FOURTH SEMESTER		Credits
SEC 246	Secretarial Microtranscription	3
SEC 247	Secretarial Office Simulation	3
SEC 242	Professional Internship	2
MTR 102	Medical Terminology II	3
CSC	Microcomputer Elective*	1
	Elective-Social Science/Humanities	3
		15

*CSC 105 is not acceptable.

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the Secretarial Office Administration program is to prepare the student for employment in one of three secretarial fields: executive, legal, or medical. Skills related to each field are stressed. Courses in general secretarial skills are included and there is an emphasis on the use of microcomputers and word processors for transcription. The program prepares graduates to enter and advance in the secretarial profession.

The graduate should be able to:

1. demonstrate proficiency in administrative secretarial skills.

2. demonstrate a working knowledge of word processing equipment and microcomputers.
3. apply correct terminology, use forms, and demonstrate skills in the area of specialization—executive, legal, or medical.
4. speak and write clearly and effectively.
5. use skills in specialized secretarial office procedures.
6. demonstrate extensive knowledge of modern office equipment and office supplies.
7. apply working knowledge of advanced duplicating and other copying methods, word and information processing, and computation skills.
8. assess and influence behavior among supervisors, peers, and subordinates.
9. apply general knowledge of the social sciences and understand their effect on our society.
10. identify the need for physical fitness and positive leisure activities.

SERVICE AND OPERATION OF HEAVY CONSTRUCTION EQUIPMENT (SO)

Certificate/2 years

This program trains students to maintain, repair and operate many types of construction equipment. It covers the rebuilding of gasoline and diesel engines; power trains; hydraulic and hydrostatic systems; surveying, estimating; and complete mechanical safety measures.

Types of Jobs: Operation, mechanical repair, sales and service of heavy equipment, including work in parts department. Self-employed or employed by contractors, mines, quarries, farm equipment dealers, forestry equipment dealers and construction equipment dealers.

FIRST SEMESTER		Credits
SOE 713	Service and Operation (8 weeks)	7
SOE 714	Service and Operation (8 weeks)	7
MTH 710	Technical Mathematics I	3
		17

SECOND SEMESTER		Credits
SOE 725	Service and Operation III (8 weeks)	7
SOE 726	Service and Operation IV (8 weeks)	7
ENL 711	Communications	3
		17

THIRD SEMESTER		Credits
SOE 837	Service and Operation V (8 weeks)	7
SOE 838	Service and Operation VI (8 weeks)	7
	Optional Elective	0/3
		14/17

FOURTH SEMESTER		Credits
SOE 847	Service and Operation VII (8 weeks)	6
SOE 848	Service and Operation VIII (8 weeks)	6
	Optional Elective	0/3
		12/15

Co-op Options:
- Alternating
- Parallel
- Summer

PROGRAM OBJECTIVES

The general objective of the Service and Operation of Heavy Equipment program is to prepare students for jobs in the construction equipment industry.

A graduate of Service and Operation should be able to:

1. practice approved safety procedures in various work situations.
2. read and interpret equipment manuals and issue clear, legible, and complete service reports.
3. identify and manipulate tools of the trade.
4. describe the operation of internal combustion engines and demonstrate skills in troubleshooting, maintaining and repairing such engines.
5. troubleshoot, maintain, and repair the complete power train and related components such as brake systems.
6. demonstrate skills in oxyacetylene welding, cutting, brazing, and electric welding applications.
7. distinguish the various types of hydraulic systems, power shift transmissions, torque converters, fuel systems, and heavy duty electrical systems found on construction equipment; maintain, troubleshoot, and repair these systesm.
8. demonstrate the use of transits and hand levels in construction layouts.
9. perform preventive maintenance on all heavy equipment systems.
10. demonstrate the use of various pieces of heavy equipment and use earth-moving techniques accepted by industry.
11. use appropriate math skills to solve applied problems in the field of heavy equipment.
12. identify the personal attributes required for successful relationships with employers, customers, and fellow employees.

OK/new if available

SURGICAL TECHNOLOGY (ST)

Certificate/1 year

Surgical Technology prepares students to take the National Certification exam—given by the Association of Surgical Technologists and required for employment in this field. Students develop skills in operating room procedures in area hospitals. The program includes classroom instruction in anatomy, physiology and surgical technology. This combination of clinical training and classroom work prepares students to work with surgeons and nurses in hospital operating rooms. Students must earn a minimum grade of "C" in each aspect of their Surgical Technology courses. Failure to do so will result in termination from the program. Students are required to take the Pennsylvania State Board test and have a personal interview.

Types of Jobs: Member of a surgical team in a hospital operating room and other related areas where surgical techniques are used.

FIRST SEMESTER		Credits
BIO 103	Human Anatomy & Physiology Survey	3
MTR 101	Medical Terminology I	3
SRT 110	Principles of Surgical Technology I	12
		18

SECOND SEMESTER		Credits
SRT 120	Principles of Surgical Technology II	4
SRT 121	Clinical Surgical Technology	10
SRT 122	Department Operating Techniques	3
		17

PROGRAM OBJECTIVES

The general objective is to prepare students to take the National Certification exam required for employment as a certified operating room technician.

The Surgical Technology graduate should be able to:

1. apply background knowledge of the basic sciences, surgical anatomy, and aseptic technique in surgical procedures.
2. describe operating room techniques and their relation to patient care in order to perform tasks assigned by professional nursing personnel.
3. practice good personal hygiene habits and state their effect in reducing infection.
4. describe the interdepartmental relationships between the operating room and other hospital services.
5. identify the need for adhering to hospital policies and procedures, ethics, and medical, moral, and legal codes.
6. describe the development of a rigid surgical conscience, its application in the operating room and its relationship to an uncomplicated post-operative recovery for the patient.
7. apply and, when necessary, modify aseptic principles when encountering unexpected emergency situations.
8. demonstrate knowledge and understanding of all surgical procedures in order to function as a member of the surgical team; give appropriate assistance to the surgeon and meet the needs of the patient.
9. identify and describe the cost, preparation, use, care and after-care of equipment, instruments and supplies, and their importance in the safe and effective performance of surgical procedures.
10. demonstrate awareness of the responsibilities and limitations of the role of the operating room technician and work within these limits.
11. state the extent of liability of operating room technicians and the importance of correct, adequate, direct supervision.
12. describe the organization of the hospital, its physical plant, and personnel requirements, practices and policies.
13. work quickly; use operating room materials economically; demonstrate accuracy, speed, physical stamina and the ability to respond appropriately to emergency situations.
14. demonstrate knowledge of the holistic approach to patient care.

TECHNICAL ILLUSTRATION (TI)

Associate Degree/2 years

This program trains students for jobs in industry as technical illustrators. Students learn to convert engineering drawings into three-dimensional illustrations used by engineers and in publications—parts catalogs, sales materials, repair manuals and others. The program includes training in drawing and other art skills. Courses in the humanities, mathematics and communications improve students' potential for advancement.

Types of Jobs: Technical illustrator for industry, either in an engineering or publications department. In the engineering field you would produce clear, accurate pictures drawn from blueprints for engineers; in publications, you would produce illustrations for company literature, parts and sales catalogs, maintenance, repair, and assembly manuals, charts, and handbooks.
Recommended High School Subjects: Two years of algebra, one year of science.

FIRST SEMESTER		Credits
EDT 111	Basic Drafting (8 weeks)	4
EDT 112	Basic Drafting II (8 weeks)	4
ART 111	Basic Drawing	3
ENL 111	English Composition	3
MTH 103	College Algebra & Trigonometry I	3
		17

SECOND SEMESTER		Credits
EDT 121	Power Transmission (8 weeks)	4
EDT 122	Mechanisms (8 weeks)	4
MTH 104	College Algebra & Trigonometry II	3
PED	Fitness & Lifetime Sports	1
	Elective*	3
		15

THIRD SEMESTER		Credits
EDT 108	Manufacturing Processes	3
ART 121	Basic Painting	3
ART 232	Lettering and Layout	3
GCO 515	Layout and Design	3
GCO 516	Typographic Composition	3
PED	Fitness & Lifetime Sports	1
	Elective*	3
		19

FOURTH SEMESTER		Credits
ART 241	Media and Techniques	3
GCO 525	Process Camera	3
GCO 526	Film Assembly and Imposition	3
ENL 121	English Composition II	3
	Elective-General*	3/4
		15/16

*Suggested Electives

MGT 110	Principles of Business	3
ENL 202	Fundamentals of Speech	3
HIS 115	World Civilization I	3
HIS 125	World Civilization II	3
HIS 231	U.S.—Survey I	3
JOU 232	Copyreading and Editing	3
PSC 231	American Government-National	3
PSC 241	State and Local Government	3
PSY 111	General Psychology	3
SOC 111	Introduction to Sociology	3
ECO 201	Principles of Economics	3
ESC 100	Environmental Science	3
GEL 105	Physical Geology	4

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of the Technical Illustration program is to prepare students for jobs as technical illustrators in industry, or for transfer to a baccalaureate degree program.

A graduate of the Technical Illustration program should be able to:

1. convert engineering drawings into three-dimensional illustrations.
2. letter and lay out materials using a variety of mediums—black and white and color—both in line and continuous tone (refers to use of shading or color in illustration).
3. relate technical knowledge to the areas above in order to make effective decisions.
4. follow written and verbal directions.
5. demonstrate respect for equipment and use appropriate safety precautions when working around equipment.
6. demonstrate good work habits: promptness, willingness to work, and receptivity to supervision.
7. use mathematical skills for effective job performance and as required for the development of visualization skills and logical thought processes.
8. communicate clearly, both verbally and in writing.
9. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.

TECHNOLOGY STUDIES (TS)

Associate Degree

Technology Studies is a flexible program—designed especially for, but not limited to—people currently employed in industry or business. Course selection is based almost entirely upon the goals of the individual student. As many as 30 credits may be awarded through advanced placement, credit by examination, or credit for work/life experience, thus reducing the number of courses to be completed on campus. Most students will complete this program on a part-time basis; therefore, a number of specialized courses will be offered in a rotating sequence to provide increased scheduling opportunites.

The minimum requirements for the Associate Degree in Technology Studies are:

1. Successfully complete a minimum of 60 credit hours of associate degree level courses (see page 88 for definition) in a planned program of study.
2. The 60 credit hours must include at least 18 credits of general education core courses selected from the following:

	Credits
Communications	6
Mathematics	6
Natural Sciences	3/4
Social Sciences and Humanities	3
	18/19

3. Forty-two credits must be taken as electives. Of these, 30 elective credits must be taken in technical career or vocational courses which are applicable to the Associate of Applied Science degree. Elective courses should be selected primarily on the basis of the student's vocational goals. The electives enable the student to select those vocational and/or general education courses which best meet his/her career, professional, and personal objectives.
4. Students must complete a planned educational program of studies. This plan should be developed in conjunction with an advisor and be filed with the appropriate division director prior to the completion of the first 18 hours of credit.

INDIVIDUAL CURRICULUM POSSIBILITIES

In consultation with an advisor, students may select precisely those courses which best meet their needs and prepare them to reach their goals. Examples of groups of courses which a student might select in designing his/her program are shown below.

Industrial Emphasis—Courses selected may include:

Courses in specialized fields, such as Machine Tool Technology, Electronics, Automotive Technology (based on student interest and course availability)
Industrial and Organizational Psychology
Supervision and Human Relations
Quality Control
Motion and Time Study
Specialized mathematics, such as statistics, applied calculus
Technical Writing

Engineering Emphasis—A student taking the Engineer in Training (EIT) courses (see page 86) may use completed EIT courses to fulfill requirements for the Technology Studies Degree. These courses are offered on a rotating, part-time basis and include:

Statics
Strength of Materials I
Dynamics
Fluid Mechanics
Strength of Materials II
Engineering Economics
Engineering Chemistry
Thermodynamics
Engineering Physics
Engineering Electronics

Management and Supervision Emphasis—Courses selected may include:

Principles of Business
Business Communications
Economics
Accounting
Supervision and Human Relations
Small Business Management
Psychology
Business Law
Specialized Mathematics
Computer Science
Specialized technical courses directed toward the student's vocational objectives.

EVENING PROGRAM

Courses required for the associate degree in Technology Studies are also offered in the evenings for the convenience of students who are unable to attend classes during the day. Students may complete all courses required for a degree in Technology Studies by enrolling in evening courses on a part-time basis. Part-time students may require more than two years to complete the program.

PROGRAM OBJECTIVES

The general objective of the Technology Studies program is to enable the employed person to upgrade his/her skills and knowledge, whether for personal or professional reasons.

The graduate should be able to:

1. demonstrate potential for growth and apply the skills and competencies acquired.
2. formulate ideas logically and organize them into a productive plan to accomplish a chosen goal.
3. demonstrate increased vocational knowledge and skills.
4. illustrate an attitude of responsibility to self, employer, and community.
5. communicate effectively in personal and job related activities.
6. demonstrate comprehensive knowledge of communication and mathematical skills.
7. apply general knowledge of the social and natural sciences and understand their effect on our environment.

TOOL DESIGN TECHNOLOGY (TD)

Associate Degree/2 years

This program provides instruction in drafting, tool production techniques and tool drawings. It emphasizes planning and making drawings of special mechanical devices (dies, gages, cutting tools, jigs, fixtures) ranging from simple hand tools to complex progressive dies (a type of machine tool). The student is taught to write programs for production jobs on computer-controlled machines.

Types of Jobs: Tool, machine, and product designer; numerical programmer, design drafting, estimator, and systems program designer, processor.
Recommended High School Subjects: Two years of algebra.
*GENERAL ELECTIVES are courses chosen from outside your program of concentration.

FIRST SEMESTER		Credits
EDT 108	Manufacturing Processes	3
EDT 111	Basic Drafting I (8 weeks)	4
EDT 112	Basic Drafting II (8 weeks)	4
ENL 111	English Composition I	3
MTH 103	College Algebra & Trigonometry I	3
PED	Fitness & Lifetime Sports	1
		18

SECOND SEMESTER		Credits
EDT 121	Power Transmission (8 weeks)	4
EDT 122	Mechanisms (8 weeks)	4
ENL 121	English Composition II	3
MTH 104	College Algebra & Trigonometry II	3
PED	Fitness & Lifetime Sports	1
		15

THIRD SEMESTER		Credits
TDT 231	Tool Drafting (8 weeks)	4
TDT 232	Fixture Design (8 weeks)	4
PHS 100	Physics-Mechanics	4
	Elective-General*	3/4
		15/16

FOURTH SEMESTER		Credits
TDT 241	Gage Design and Programming (8 weeks)	4
TDT 242	Die Design (8 weeks)	4
PHS 106	Introduction to Metallurgy	4
	Elective-General*	3/4
		15/16

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of this program is to train students in the skills needed for jobs in tool design.

A graduate of the Tool Design Technology program should be able to:

1. describe and apply the various manufacturing methods related to tool design.
2. select cutting tool materials to satisfy various metal removal operations.
3. apply tolerance limits and fits to meet manufacturing requirements.
4. apply calculations to determine cutting speeds and feeds for various metal removal applications.
5. design jigs and fixtures to hold tools and workpieces for the various metal removal applications.
6. design various kinds of gages and gaging setups to insure quality control.
7. write numerical control programs.
8. design piercing, stamping, and forming dies.
9. apply the basic principles of physics and metallurgy to the tool design process.
10. use mathematical skills to solve design problems.
11. communicate effectively in small group and interpersonal situations that may occur in industry.
12. participate as an informed citizen in a democratic society based on values acquired in humanities and social science courses.
13. develop and use the fundamental skills provided through exposure to lifetime sports.
14. demonstrate fundamental skills and knowledge in the use of computer-aided drafting (CAD) and computer-aided manufacturing (CAM).
15. perform basic drawing functions on computer-aided drafting equipment.

TOOLMAKING TECHNOLOGY (TT)

Associate Degree/2 years

This program prepares students to work with engineers and shop superintendents. Students develop skills in machine operation and theory, blueprint reading and mechanical drawing in the program's labs and shops. Training in job routing and the order in which operations are performed is included. In the third semester the emphasis is on CNC—computer numerical control—systems and computer part programming capabilities. The program includes discussions of such topics as robotics, graphics, group technology, future trends, and numerical control terms, definitions and standards. Related courses in mathematics, science and physics improve students' advancement potential.

Types of Jobs: Toolmaker; experimental numerical controller; production technician; administrative assistant.
Recommended High School Subjects: Two years of algebra, one year of science.

FIRST SEMESTER		Credits
MTT 110	Machining I	5
MTT 115	Machining II	5
MTH 103	College Algebra & Trigonometry I	3
ENL 111	English Composition I	3
		16

SECOND SEMESTER		Credits
MTT 120	Machining Processes	5
MTT 125	Metrology/Quality Control	5
ENL 121	English Composition II	
	or	3
ENL 201	Technical Writing	
MTH 104	College Algebra & Trigonometry II	3
CIM 101	Basic Machine Tool Programming	3
		19

THIRD SEMESTER		Credits
MTT 210	Tool Technology	5
CIM 121	NC/CNC Programming	3
CIM 122	NC/CNC Machine Operations	4
PHS 100	Physics-Mechanics	4
EDT 101	Mechanical Drawing	2
		18

FOURTH SEMESTER		Credits
CIM 201	Grinding/Heat Treatment	5
CIM 203	Special Machining Processes	2
CIM 204	Tooling	3
PHS 106	Introduction to Metallurgy	4
	Elective-Humanities/Social Science	3
		17

Co-op Options:
Alternating
Parallel
Summer

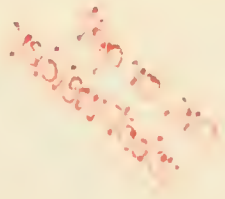
PROGRAM OBJECTIVES

The overall objective is to prepare students for jobs in the machine tool industry.

A graduate of the Toolmaking Technology program should be able to:

1. demonstrate safe work habits and be conscious of safety when working with machinery.
2. read blueprints, interpret drawings, understand specifications, and establish tolerances.
3. apply mathematics in the machine tool trade (speeds, feeds, thread measurement, sinebar, etc.).
4. apply the principles of physics and metallurgy to the science of heat treatment operations including:
   A. hardening of steel
   b. carburizing
   c. case hardening
   d. tempering
   e. annealing
5. operate basic machine tools and demonstrate knowledge of their construction in relation to the metal industry.
6. describe the construction and operation of production machinery, including turret lathes, screw machines, automatic tappers, etc.
7. demonstrate skills on numerical control machine, electrical discharge machine, electrical chemical grinder, digital readout, diemaking, jig grinding, jigs and fixtures.
8. operate abrasive cutting machinery and select and plan machining operations on this equipment.
9. demonstrate skills in quality control, inspection, gaging methods, and production control as they relate to manufacturing design and production.
10. demonstrate basic verbal communication skills, speak logically, and use various types of verbal and written communication techniques to promote good business relationships, to develop leadership, and to establish good employer-employee-customer relationships.
11. demonstrate knowledge of a lifetime sport which will provide recreation and promote physical fitness.

new



WELDING (WE)

Certificate/2 years

This program offers practical skills training in welding and a background in welding theory. It emphasizes electric, oxyacetylene, and inert gas shielded methods of welding.

Types of Jobs: Welder, welder operator, fitter, specialist, supervisor, and inspector.

FIRST SEMESTER		Credits
WEL 712	Acetylene Welding	13
MTH 710	Technical Mathematics I	3
		16

SECOND SEMESTER		Credits
WEL 722	Electric Welding	13
ENL 711	Communications	3
		16

THIRD SEMESTER		Credits
WEL 832	Inert Gas Welding	13
EDT 107	Blueprint Reading	2
	Optional Elective	0/3
		15/18

FOURTH SEMESTER		Credits
WEL 842	Welding (Advanced)	13
	Optional Elective	0/3
		13/16

Co-op Options:
Parallel
Summer

PROGRAM OBJECTIVES

The general objective of this program is to prepare the students for jobs in welding.

A graduate of the Welding program should be able to:

1. demonstrate skills in oxyacetylene, shielded metal arc, gas tungsten arc, and gas metallic arc welding proceses.
2. operate welding equipment.
3. use safe welding techniques in shop and field operations.
4. distinguish the types of welding power sources (electric, gas, etc.), their characteristics, uses, and limitations.
5. inspect welding jobs using visual, destructive, and non-destructive testing methods.
6. construct weldments (objects made by welding metal) from sketches, blueprints or verbal instructions; understand welding symbols.
7. select the proper welding process, welding procedures, supplies, etc., based on cost limitations.
8. use simple shop methods for determining types of metals (ferrous and non-ferrous).
9. apply knowledge of the physical and mechanical properties of metals, as related to weldability, during the welding process.
10. duplicate welding qualification tests according to specifications of the American Welding Society, the American Society of Mechanical Engineers and the American Petroleum Institute Codes.
11. develop positive social attitudes and good work habits.
12. use the appropriate mathematical skills and competencies in solving applied problems in the field of welding.
13. demonstrate basic skills in speech and technical writing.

OK or get robot welder

THE WILLIAMSPORT AREA COMMUNITY COLLEGE

OFFICE OF ADMISSIONS

ACADEMIC CENTER, ROOM 104
1005 WEST THIRD STREET
WILLIAMSPORT, PENNSYLVANIA 17701-5799

All Offices: (717) 326-3761
Admissions, Toll-Free: 1-800-FOR-WACC

APPLICATION FOR ADMISSION

The Williamsport Area Community College does not discriminate on the basis of age, sex, handicap, race, religion, creed, national origin, veteran status, or political affiliation. Student inquiries concerning Title VI, IX and Section 504 compliance should be directed to the Title VI, IX and Section 504 Coordinator, Lawrence W. Emery, Jr., Room 157-F, LRC, The Williamsport Area Community College, 1005 West Third Street, Williamsport, PA 17701-5799, (717) 327-4765, or to the Director of the Office of Civil Rights, Department of Education, Office of Civil Rights, Washington, D.C. 20201.

ALL SECTIONS MUST BE COMPLETED

Social Security Number: _____

Name: _____
(Last) (First) (Middle)

Last name as may appear on other records: _____

Legal Residence: _____

_____

City, State: _____ Zip: _____

School District of Residence: _____ _____
(Code)
(See Table: if not given, leave blank.)

County Residence: (Penna. Only) _____ Township _____

Telephone Number: (_____) _____
(Area Code)

In case of emergency contact: _____ Phone Number (_____) _____
Name (Area Code)

Federal and State Reporting Requirements
Necessitate Completion of the Following Information

Birth Date: _____ — _____ — _____
(Month) — (Date) — (Year)

Sex: Male_____
Female_____

Race: Black _____(B)
American Indian _____(N)
Asian _____(A)
Hispanic _____(H)
White _____(W)

Provide Prior Educational Experience As Listed:

Type Institution	Code (College Use)	Name	City State	High School Program	Year of Graduation or Last Semester of Attendance	Degree (If Earned)
High School				_ Academic _Business _General _Vocational		
A.V.T.S.				A.V.T.S. Program		
Trade School						
College University						
College University						
*W.A.C.C.		W.A.C.C.	Williamsport, PA			

*If you ever attended The Williamsport Area Community College, PLEASE COMPLETE the blanks in the line above. (Do not include non-credit courses or secondary vocational training.) Re-enrolled students are not required to pay another application fee.

I am applying for the following:

Program of Study:_____ Second Choice:_____
(See Table Below)

Semester:

_____Fall (August) _____Spring (January) _____May _____June Year 19_____

Campus:

_____Williamsport _____North (Wellsboro)

I will be attending primarily:

____Days ____Evenings ____Weekends

____Full-Time ____Part-Time

School District Codes:

Athens 08050
Austin 53030
Canton 08100
Coudersport 53130
Danville 47180
East Lycoming 41200
Galeton 53280
Jersey Shore 41400
Keystone Central 18360
Lewisburg 60400
Line Mountain 49350
Loyalsock 41420
Midd West 55500
Mifflinburg 60500
Millville 19500
Milton 49500
Montgomery 41500
Montoursville 41510
Mt. Carmel 49510
Muncy 41530
North East Bradford 08300
Northern Potter 53550
Northern Tioga 59600
Northumberland 49520
Oswago Valley 53750
Sayre 08600
Selinsgrove 55710
Shamokin 49650
Shikellamy 49660
South Williamsport 41610
Southern Tioga 59700
Sullivan County 57630
Sun AVTS 49670
Towanda 08650
Troy 08665
Warrior Run 49800
Wellsboro 59850
Williamsport 41720
Wyalusing 08900

Table of Programs of Study:

ASSOCIATE DEGREE

BA-Accounting
AR-Advertising Art
AG-Agribusiness
RA-Air Conditioning & Refrigeration
AT-Architectural Technology
AF-Automated Manufacturing Technology
AU-Automotive Technology
AD-Aviation Technology
BR-Broadcasting
CB-Building Construction Technology
BM-Business Management
CT-Civil Engineering Technology
CS-Computer Information Systems
DH-Dental Hygiene
DD-Diesel Technology
EL-Electrical Technology
ET-Electronics Technology
ED-Engineering Drafting Technology
FL-Floriculture
FH-Food & Hospitality Management
FR-Forest Technology
GS-General Studies
GA-Graphic Arts
HS-Human Services
IS-Individual Studies
JO-Journalism
NM-Landscape Nursery Technology
OC-Occupational Therapy Assistant
RT-Radiography
RM-Retail Management
SA-Secretarial Office Administration
TI-Technical Illustration
TS-Technology Studies
TD-Tool Design Technology
TT-Toolmaking Technology
WP-Word Processing

CERTIFICATE DEGREE

RC-Air Conditioning and Refrigeration
AB-Auto Body Repair
AM-Automotive Mechanics
AC-Aviation Maintenance Technician
BT-Clerical Studies
CO-Computer Operations Technology
CC-Construction Carpentry
CA-Culinary Arts
DY-Dairy Herd Management
DA-Dental Assisting
DM-Diesel Mechanics
EO-Electrical Occupations
ID-Industrial Drafting
MG-Machinist General
SM-Outdoor Power Equipment
PL-Plumbing and Heating
NU-Practical Nursing
GP-Printing
SO-Service and Operation of Heavy Construction Equipment
ST-Surgical Technology
WE-Welding
Other-please specify

UN-Non-Degree**

I certify that all information provided is complete and accurate.

Signature: _____ Date:_____

Before mailing this application, please be sure that you have:

- •Requested your high school transcript (or GED) to be sent to the Office of Admissions.
- •Requested all college transcripts and descriptions of courses to be sent to the Office of Admissions.
- •Included your check for $15.00 made payable to The Williamsport Area Community College.
- •Completed the application. Incomplete applications will delay the acceptance process.

**NON-DEGREE STUDENTS (UN ONLY) ARE NOT REQUIRED TO PAY THE APPLICATION FEE OR SUBMIT TRANSCRIPTS. NON-DEGREE STUDENTS ARE NOT ELIGIBLE FOR ANY TYPE OF FINANCIAL AID.

By collecting the following information the College can plan programs and services to benefit you and other students. The data collected will not be used in admissions process and will have no effect on your acceptance at the College. Thank you for your help. (PLEASE CIRCLE THE MOST APPROPRIATE RESPONSE.)

1. What is your primary reason for choosing to enroll at The Williamsport Area Community College?
   A. Low cost
   B. Convenience
   C. Quality of courses and faculty
   D. Choice of courses and program
   E. Other (specify) _____

2. What is your primary goal in attending The Williamsport Area Community College?
   A. Prepare for first job
   B. Retraining
   C. Upgrading current employment skills
   B. To transfer to a four-year institution
   E. Personal interest
   F. Other (specify) _____

3. Do you intend to be employed outside your home while attending The Williamsport Area Community College?
   A. Full-Time
   B. 31-40 Hours Weekly
   C. 21-30 Hours Weekly
   D. 11-20 Hours Weekly
   E. 1-10 Hours Weekly
   F. No, I will not be employed

4. At this time, have you also applied to another college?
   A. Yes
   B. No

5. At this time, have you been accepted at another college?
   A. Yes
   B. No

6. Are you the first person in your immediate family to attend college?
   A. Yes
   B. No

7. Have any other members of your family ever attended The Williamsport Area Community College?
   A. If yes, please specify who_____ _____
   Relation Name
   B. No

8. How many people are in your immediate family, including yourself?_____

9. Please estimate your annual household income. (This information is extremely confidential but is helpful in our marketing plan.)
   A. Less than $5,999
   B. $ 6,000 - 11,999
   C. 12,000 - 18,999
   D. 19,000 - 23,999
   E. 24,000 - 29,999
   F. Above 30,000

10. Please indicate the highest completed educational level for these family members.

Parent/Spouse Highest Education Level	Father	Mother	Spouse
Less than high school			
High school			
Some college			
Two-year degree			
Four-year degree			
MA MS MBS or equivalent			
PhD EdD or equivalent			

W
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WORD PROCESSING (WP)

Associate Degree/2 years

Students acquire a background in business and learn the specialized skills used in word processing operations. Graduates are qualified for jobs as word processing equipment operators and as first-line supervisors in word processing centers.

Types of Jobs: Word processing equipment operator and word processing center supervisor.

FIRST SEMESTER		Credits
CSC 118	Fundamentals of Computer Science	3
ENL 111	English Composition I	3
MGT 110	Principles of Business	3
MGT 230	Business Communications	3
SEC 111	Typewriting I	3
PED	Fitness & Lifetime Sports	1
		16

SECOND SEMESTER		Credits
CSC	Elective - Computer Science	3
ENL	Elective English	3
MGT 111	Business Mathematics	3
SEC 121	Typewriting II	3
WDP 121	Word Processing I	3
PED	Fitness & Lifetime Sports	1
		16

THIRD SEMESTER		Credits
ACC 112	Accounting I	3
WDP 231	Machine Transcription and Office Procedures	3
WDP 232	Word Processing II	3
	Elective - Business/Computer Science	3
	Elective	3
		15

FOURTH SEMESTER		Credits
MGT 248	Supervision and Human Relations	3
WDP 241	Word Processing III	3
WDP 242	Word Processing Internship*	3
	Elective	3
	Elective - Social Science/Humanities	3
		15

*A cooperative education experience may be substituted for Word Processing Internship.

PROGRAM OBJECTIVES

The primary objective of the Word Processing program is to prepare students for positions as word processing operators and first-line supervisors of word processing centers.

The graduate should be able to:

1. operate various types of word processing equipment.
2. select the best machine and methods to handle a given word processing task.
3. communicate effectively in writing.
4. edit materials, applying the rules of business writing, grammar, punctuation and transcription.
5. produce final copy from various forms of input: handwritten copy, machine dictation, etc..
6. demonstrate extensive knowledge and skill in using transcription equipment.

7. operate various types of advanced word processing printing devices.
8. handle communications between an information processor and a document printer.
9. design and prepare an effective procedures manual.
10. manage work flow by prioritizing work.
11. understand the role of management in word processing: personnel selection, training, and motivation.
12. demonstrate extensive knowledge of modern office equipment and office supplies.
13. demonstrate ability to reason logically, to analyze, and to evaluate information and to apply these processes to word processing problems.
14. relate in a positive manner to supervisors, peers and subordinates.
15. apply general knowledge of the social sciences.
16. identify the need for physical fitness and positive leisure activities.

OK

General Studies

This program offers the equivalent of the first two years in a four-year Bachelor of Arts or Bachelor of Science program. The program is flexible—students select courses based on the requirements of the four-year college to which they plan to transfer. (We recommend that students identify the college to which they plan to transfer as soon as possible.) A faculty advisor works with each student to design a program that best meets the student's future plans. Cooperative education options are available to students in General Studies.

OBJECTIVES

Upon completion of the General Studies program the student will:

1. have general knowledge in each of the following areas: Communications, Mathematics and/or Statistics, Humanities, Social Science, Natural Sciences, and the development and maintenance of good health.
2. have comprehensive knowledge in one or more of the following areas: Communications, Mathematics and/or Statistics, Humanities, Social Science, Natural Sciences.
3. have the academic background needed to transfer into related baccalaureate degree programs.
4. demonstrate the ability to reason logically, to analyze, synthesize, and evaluate information, and to apply mathematical reasoning processes and the scientific method.
5. have an open mind and the willingness to modify performance or attitudes when faced with sufficient reason to do so.
6. produce work that demonstrates the ability to integrate various academic and practical experiences.
7. display an awareness of our cultural traditions and a sensitivity toward the traditions of other cultures.
8. display acceptable social values and attitudes in day-to-day activity, including productive citizenship and responsibility toward self and others.
9. experience greater joy in living because of an increased awareness of the social, cultural, and natural environments.

GRADUATION REQUIREMENTS

1. Successfully complete the College's graduation requirements for all Associate Degree Programs. (See pg. 131.)
2. Successfully complete a minimum of 60 credits of Associate Degree level course work (courses numbered 100 - 299) selected from the General Education Core areas (as defined below) plus four credits in health and fitness and lifetime sports.

   GENERAL EDUCATION CORE

   Communications
   English
   Languages
   Speech

   Quantitative Concepts & Skills
   Mathematics
   Statistics

   Humanities
   Philosophy
   History
   Political Science

   Social Sciences
   Economics
   Psychology
   Sociology

   Natural Sciences
   Biology
   Chemistry
   Physics
   Environmental Science
   Geology
   Geography

   Appropriate associate degree courses in other subject areas may be substituted for the General Education Core courses with the prior written approval of the student's advisor and Division Director.
3. Successfully complete 25/26 credits of Associate Degree level General Education Core courses which must include:

Communications	6 credits
Quantitative Concepts and Skills	6 credits
Humanities	3 credits
Social Science	3 credits
Natural Science (to include at least 3 hours of laboratory)	7-8 credits

4. Successfully complete 2 credits in health and 2 credits in fitness and lifetime sports OR 4 credits in fitness and lifetime sports. Part-time students may be exempt from this requirement.
5. Complete all placement testing required by the College. Students must demonstrate basic mastery of English, reading, and mathematics through placement testing or through successful completion of appropriate courses (Developmental Studies courses) designed to provide basic skills and competencies in these areas.

The General Studies Program Curriculum (GS)

To meet individual needs, students may schedule courses other than those listed below (upon the recommendation of the student's academic advisor and approval by the appropriate Division Director). It is strongly recommended that as early as possible the student review the requirements of the particular program and the institution he/she plans to attend upon completing the General Studies program. Elective credits can then be selected to meet these requirements.

FIRST SEMESTER		Credits
ENL 111	English Composition I	3
MTH 101	Introduction to Mathematics I	
	or	3
MTH 103	College Algebra & Trigonometry I	
PED	Fitness & Lifetime Sports	1
	Elective-Humanities	3
	Elective-Natural Science*	3-4
	Elective-General Core	3
		16-17

SECOND SEMESTER		Credits
ENL 121	English Composition II	3
MTH 102	Introduction to Mathematics II	
	or	3
MTH 104	College Algebra & Trigonometry II	
PED	Fitness & Lifetime Sports	1
	Elective-Social Science	3
	Elective-Natural Science*	3-4
	Elective-General Core	3
		16-17

THIRD SEMESTER	Credits
**An elective program based on the student's major educational and vocational interests. Completion of Fitness & Lifetime Sports requirement.	16-18 Credits

FOURTH SEMESTER	Credits
**An elective program based on the student's major educational and vocational interests.	16-18 Credits

*To include at least one course with a three-hour laboratory.

**Elective credits may come from any 100 or 200 level associate degree courses offered by the College. We recommend that most of these credits be taken in the General Education core discipline ares, especially if students plan to transfer to four-year degree programs.

Courses in other subject areas must be approved by the student's advisor and Division Director.

Curriculum Guides

Students who plan professional or semi-professional preparation in the arts and sciences may begin their undergraduate studies at The Williamsport Area Community College. Students who plan to transfer to four-year institutions to complete the requirements for the baccalaureate degree should schedule courses that meet the requirements of the institution to which they plan to transfer. The students' success in transferring to a particular college will largely depend on the quality of academic achievement at The Williamsport Area Community College.

Curriculum guides for professional careers requiring education beyond an associate degree are shown below.

1. Business Administration Emphasis
2. Communications Emphasis
3. Education Emphasis
4. Math-Science Emphasis
5. Pre-Law Emphasis
6. Pre-Medical Emphasis
7. Pre-Theological Emphasis

The curriculum guides which follow are recommended (not required) programs.

Business Administration Emphasis

This program is designed for students who plan to transfer to a four-year college or university to earn a baccalaureate degree in Business Administration. Career possibilities for students who complete a four-year program include accounting, economics, finance, foreign commerce, economic geography, industrial management, personnel management, insurance, marketing, and real estate.

FIRST SEMESTER		Credits
ENL 111	English Composition I	3
MTH 103	College Algebra & Trigonometry I	3
HIS 115	World Civilization I	
	or	3
HIS 231	United States-Survey I	
MGT 110	Principles of Business	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
		16

SECOND SEMESTER		Credits
ENL 121	English Composition II	
	or	3
ENL 201	Technical Writing	
MTH 201	Elementary Statistics	3
HIS 125	World Civilization II	
	or	3
HIS 241	United States-Survey II	
ECO 201	Principles of Economics	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
		16

THIRD SEMESTER		Credits
ENL 202	Fundamentals of Speech	3
ACC 112	Accounting I	3
MGT 231	Business Law I	3
PSY 111	General Psychology	3
PED	Fitness & Lifetime Sports	1
	Elective-Natural Science	3-4
		16-17

FOURTH SEMESTER		Credits
ACC 122	Accounting II	3
MGT 241	Business Law II	3
CSC 118	Fundamentals of Computer Science	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
	Elective-Natural Science	3-4
		16-17

Communications Emphasis

The program is designed for students planning careers in the field of communications. Career possibilities include: advertising, broadcasting, freelance writing, journalism and public relations. The intent of this program is not to prepare students for immediate employment upon graduation. It offers students opportunities to explore various careers in mass communications while completing course work designed to transfer to a four-year college or university.

FIRST SEMESTER		Credits
ENL 111	English Composition I	3
JOU 111	News Writing	3
JOU 114	Mass Media Photography	3
MCM 111	Introduction to Mass Communications	3
PED	Fitness & Lifetime Sports	1
	Math elective*	3
		16

SECOND SEMESTER		Credits
ENL 121	English Composition II	3
MCM 122	Media and the Law	3
PSY 111	General Psychology	3
HIS 115	World Civilization I	3
PED	Fitness & Lifetime Sports	1
	Math elective*	3
		16

THIRD SEMESTER		Credits
ENL 235	Creative Writing	3
JOU 231	Feature Writing	
	or	3
BRC 233	Broadcast Writing	3
SOC 111	Introduction to Sociology	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
	Elective-Natural Science	3/4
		16/17

FOURTH SEMESTER		Credits
ENL 201	Technical Writing	3
ENL 202	Fundamentals of Speech	3
MCM 243	Public Relations	
	or	3
ADV 101	Principles of Advertising	
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
	Elective-Natural Science	3/4
		16/17

*Mathematics Electives:
MTH101/102 or MTH103/104 sequence

Education Emphasis

The Education Emphasis is modeled on the first two years of a four-year professional education curriculum. Students have the opportunity to complete much of their general academic course work and to become familiar with education as a career. Students who enroll in this program usually go on to earn a baccalaureate degree. Graduates who choose not to continue their education may find jobs as teachers' aides, classroom assistants or in other paraprofessional areas.

FIRST SEMESTER		Credits
ENL 111	English Composition I	3
EDU 111	Introduction to Education	3
PSY 111	General Psychology	3
MTH 101	Introduction to Mathematics I	
	or	3
MTH 103	College Algebra & Trigonometry I	
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
		16

SECOND SEMESTER		Credits
ENL 121	English Composition II	3
EDU 121	Children's & Young Adult Literature	3
MTH 102	Introduction to Mathematics II	
	or	3
MTH 104	College Algebra & Trigonometry II	
PED	Fitness & Lifetime Sports	1
	Elective-General Core	6
		16

THIRD SEMESTER		Credits
MTH 201	Elementary Statistics	3
ECO 201	Principles of Economics	3
HIS 115	World Civilization I	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
	Elective-Natural Science	3-4
		16-17

FOURTH SEMESTER		Credits
ENL 202	Fundamentals of Speech	3
PSY 231	Educational Psychology	3
HIS 125	World Civilization II	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
	Elective-Natural Science	3-4
		16-17

Math-Science Emphasis

Students with a strong background in mathematics and science will find many opportunities in such fields as education, engineering, research, actuarial science, time-study analysis, and economics. They may also find careers as mathematical or scientific technicians in business, industry, and government.

FIRST SEMESTER		Credits
ENL 111	English Composition I	3
MTH 103	College Algebra & Trigonometry I	
	or	3-4
MTH 238	Calculus I	
HIS 115	World Civilization I	
	or	3
HIS 231	United States-Survey I	
	Laboratory Science (Biology, Chemistry, Physics, or Geology)	4
ECO 201	Principles of Economics	3
PED	Fitness & Lifetime Sports	1
		17-18

SECOND SEMESTER		Credits
ENL 121	English Composition I	3
MTH 104	College Algebra & Trigonometry II	
	or	3-4
MTH 248	Calculus II	
HIS 125	World Civilization II	
	or	3
HIS 241	United States-Survey II	
	Laboratory Science (Biology, Chemistry, Physics, or Geology)	4
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
		17-18

THIRD SEMESTER		Credits
	Literature or Sociology	3
MTH 201	Elementary Statistics	3
	Laboratory Science (Biology, Chemistry, Physics, or Geology)	4
	Computer Science	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
		17

FOURTH SEMESTER		Credits
	Literature or Sociology	3
MTH 201	Matrix Algebra	3
	Laboratory Science (Biology, Chemistry, Physics, or Geology)	4
	Computer Science	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
		17

Pre-Law Emphasis

The student who plans to enter law school should develop a program which includes a broad base of liberal studies. The Association of American Law Schools recommends that programs emphasize the following:

1. Comprehension and expression in words
2. Critical understanding of human institutions and values
3. Creative power in thinking

The program below is based on these recommendations. Modifications in this program should be planned in conjunction with the pre-law advisor.

FIRST SEMESTER		Credits
ENL 111	English Composition I	3
MTH 103	College Algebra & Trigonometry I	
	or	3-4
MTH 238	Calculus I	
HIS 115	World Civilization I	3
PSY 111	General Psychology	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
		16-17

SECOND SEMESTER		Credits
ENL 121	English Composition II	3
MTH 104	College Algebra & Trigonometry II	
	or	3-4
MTH 248	Calculus II	
HIS 125	World Civilization II	3
SOC 111	Introduction to Sociology	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
		16-17

THIRD SEMESTER		Credits
ENL 202	Fundamentals of Speech	3
ACC 112	Accounting I	3
PHL 111	Introduction to Philosophical Analysis	3
PSC 231	American Government-National	3
PED	Fitness & Lifetime Sports	1
	Elective-Natural Science	3-4
		16-17

FOURTH SEMESTER		Credits
ECO 201	Principles of Economics	3
ACC 122	Accounting II	3
PHL 121	Ethics and Political Analysis	3
PSC 241	State and Local Government	3
PED	Fitness & Lifetime Sports	1
	Elective-Natural Science	3-4
		16-17

OK

Pre-Medical Emphasis

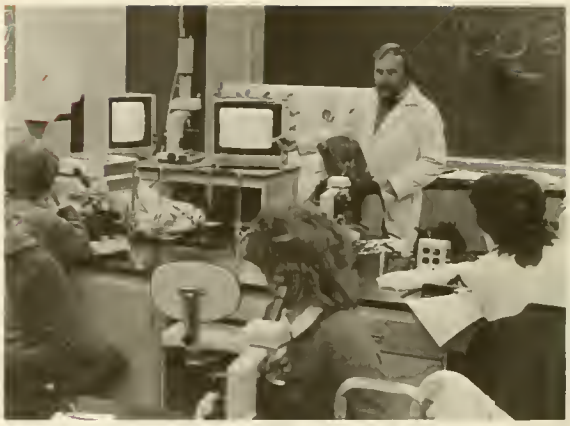
The Pre-Medical Emphasis offers preparation for careers in medicine, pharmacy, dentistry, optometry, veterinary medicine, chiropractic, other health professions, and scientific research. The program also meets the needs of students interested in fields like chemistry, physics and biology. Because of the rigorous and time-consuming nature of the medical programs—which include much training in clinical laboratories and patient-related experiences—students should have aptitudes in mathematics and science. Laboratory experience and manual dexterity are also important.

FIRST SEMESTER		Credits
ENL 111	English Composition I	3
MTH 103	College Algebra & Trigonometry I	
	or	3-4
MTH 238	Calculus I	
HIS 115	World Civilization I	
	or	3
HIS 231	United States-Survey I	
BIO 113	General Biology I	4
CHM 111	General Chemistry I	4
		17-18

SECOND SEMESTER		Credits
ENL 121	English Composition II	3
MTH 104	College Algebra & Trigonometry II	
	or	3-4
MTH 248	Calculus II	
PSY 111	General Psychology	3
BIO 123	General Biology II	4
CHM 121	General Chemistry II	4
PED	Fitness & Lifetime Sports	1
		18-19

THIRD SEMESTER		Credits
	Literature or Sociology	3
PHS 116	General Physics I	4
BIO 115	Human Anatomy & Physiology I	4
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3-6
		15-18

FOURTH SEMESTER		Credits
	Literature or Sociology	3
PHS 126	General Physics II	4
BIO 125	Human Anatomy & Physiology II	4
BIO 201	Microbiology	4
PED 201	Personal & Community Health	2
		17



Pre-Theological Emphasis

This program is designed for students planning careers in religious education, the missionary field, or the ministry. It is based on recommendations set forth by the Association of Theological Schools. They advise that students acquire a background in the liberal arts, complemented by a major in either the humanities or the social sciences. Following graduation, students should plan to complete their education at a four-year college or university.

FIRST SEMESTER		Credits
ENL 111	English Composition I	3
MTH 101	Introduction to Mathematics I	
	or	3
MTH 103	College Algebra & Trigonometry I	
PSY 111	General Psychology	3
HIS 115	World Civilization I	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
		16

SECOND SEMESTER		Credits
ENL 121	English Composition II	3
MTH 102	Introduction to Mathematics II	
	or	3
MTH 104	College Algebra & Trigonometry II	
SOC 111	Introduction to Sociology	3
HIS 115	World Civilization II	3
PED	Fitness & Lifetime Sports	1
	Elective-General Core	3
		16

THIRD SEMESTER		Credits
ENL 202	Fundamentals of Speech	3
PHL 111	Introduction to Philosophical Analysis	3
SOC 231	Marriage and the Family	3
PED	Fitness & Lifetime Sports	1
	Elective-Social Science	3
	Elective-Natural Science	3-4
		16-17

FOURTH SEMESTER		Credits
ECO 201	Principles of Economics	3
PHL 121	Ethics and Political Philosophy	3
PSY 203	Developmental Psychology	3
PED	Fitness & Lifetime Sports	1
	Elective-Social Science	3
	Elective-Natural Science	3-4
		16-17

INDIVIDUAL STUDIES PROGRAM

Individual Studies is the most flexible program offered by the College. It is designed for the student who wants to explore a number of careers—people interested in personal enrichment—someone who wants to prepare for a very specialized career--anyone whose educational goals are not met by the College's other programs. Cooperative education options are available to students enrolled in Individual Studies.

OBJECTIVES

Upon completion of the Individual Studies Program the student will have developed one or more of the following:

1. awareness of his/her academic and manual abilities and careers in which they can be applied.
2. extensive knowledge of one or more subjects.
3. technical skills in one or more areas and general knowledge in desired academic subjects.
4. entry-level job skills in a paraprofessional or technical field.
5. completion of courses required for the four-year program into which he/she intends to transfer.

GRADUATION REQUIREMENTS

1. Successfully complete the College's graduation requirements for all Associate Degree Programs. (See pg. 131.)
2. Successfully complete a minimum of sixty (60) credits of Associate Degree level course work:
   a. The 60 credit hours must include 12 credits of General Education Core courses (see page 80 for a list of General Education Core course subjects) as specified below:

Communications	6 credits
Mathematics or Statistics	3 credits
Humanities OR Social Sciences OR Natural Sciences	3-4 credits

   b. Full-time students must complete four additional credits of Fitness & Lifetime Sports, bringing the total number of required credits to 64; part-time students may be exempted from this requirement.
3. Complete all placement testing required by the College. Students must demonstrate basic mastery of English, reading, and mathematics through placement testing or through successful completion of appropriate courses (Developmental Studies courses) designed to provide basic skills and competencies in these areas.
4. The student must complete a planned educational program of studies.

   This plan should be developed by the student and his or her advisor and be filed with the appropriate Division Director prior to the completion of eighteen (18) semester hours of credit.

CURRICULUM POSSIBILITIES

Students in Individual Studies select courses based almost entirely on their goals. Advisors work with students in designing programs and selecting the courses which will best meet their needs. It may take longer than two years to complete courses desired because of scheduling conflicts. This is particularly true for students who schedule laboratory or shop courses which require large blocks of time.

A special Individual Studies option—in Respiratory Therapy Technician—is offered in cooperation with the Harrisburg Area Community College (See page 86).

AN EXAMPLE OF A PLANNED INDIVIDUAL STUDIES PROGRAM

A person may wish to enroll in the Individual Studies program to prepare for a particular occupational specialty. For example, someone who enjoys flower arranging and cooking might want to prepare to own and run a catering business. Courses could be selected from Food and Hospitality Management, Floriculture, Business, and related areas. One possible selection of 64 credits of course work follows:

Food and Hospitality Management
Quantity Food Preparation
Menu Planning & Cost Control
Purchasing, Storage & Sanitation
Hospitality Merchandising
Equipment & Layouts
Personnel Management, Work Simplification

Floriculture
Floral Design I
Floral Design II
Flower Shop Operation

Business
Principles of Business
Business Communications
Accounting I
Accounting II
Small Business Management
Business Mathematics

Related
Introduction to Mathematics I
English Composition I
English Composition II
Fundamentals of Chemistry
Fitness & Lifetime Sports

Another student with this same career goal might choose to emphasize another area depending on interest and prior experience. For example, someone who had prepared food for many large parties in their own home might feel quite competent in the food area and wish to emphasize business courses. The exact combination of courses in the individual studies program is decided entirely by the individual, with the help of an advisor.

Individual Studies Option
RESPIRATORY THERAPY TECHNICIAN (HC)
Certificate/16 months

The Respiratory Therapy Technician option is offered in cooperation with the Harrisburg Area Community College. In addition to course work at The Williamsport Area Community College, students complete specialized respiratory therapy courses in Harrisburg. Clinical training is held at the Divine Providence and Williamsport Hospitals.

The program prepares students for careers in respiratory therapy—which includes assisting in the treatment, management, control, diagnostic evaluation, and care of patients with defects and diseases of the pulmonary system (for example, asthma, cancer, emphysema). Students are required to earn a minimum grade point average of 2.00 and a minimum grade of "C" in each math and science course.

Students seeking admission to this program must meet the general college admission requirements and be accepted to The Williamsport Area Community College. On or before March 1 of the academic year at The Williamsport Area Community College four students will be selected who will be permitted to complete the program at H.A.C.C.

We recommend that students who require additional academic work, based on the results of the college placement tests, enroll in and complete the necessary courses prior to beginning this program.

The Harrisburg Area Community College also offers an associate degree level program leading to registry eligibility. For more information on the associate degree program and on registry eligibility, contact H.A.C.C. at (717) 780-2315.

Types of Jobs: Respiratory therapy technician providing patient care in hospitals and clinics.
Recommended High School Subjects: Chemistry, biology, two years of algebra.

FIRST SEMESTER		Credits
MTH 103	College Algebra & Trigonometry I	3
NUR 711	Nursing Relationships	3
BIO 115	Human Anatomy and Physiology I	4
ENL 111	English Composition I	3
PSY 111	General Psychology	3
PED	Physical Education	1
		17

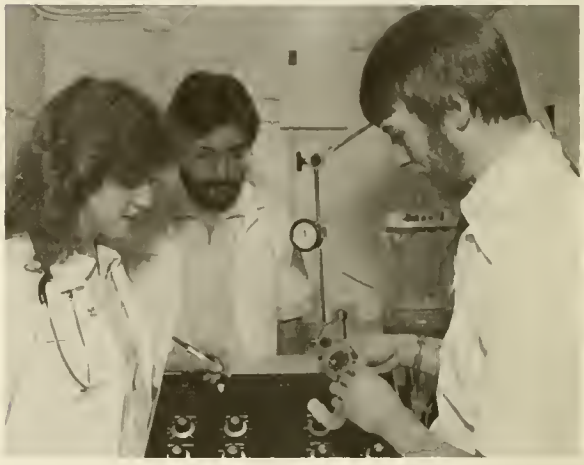
SECOND SEMESTER		Credits
BIO 125	Human Anatomy and Physiology II	4
BIO 201	Microbiology	4
CHM 100	Fundamentals of Chemistry	4
ENL 121	English Composition II	
	or	3
ENL 202	Fundamentals of Speech	
PED	Physical Education	1
		16

THIRD SMESTER		Credits
*Allied Health 111	Respiratory Therapy Survey	3

FOURTH SEMESTER		Credits
*BIO 230	Physiological Pathology	3
*Allied Health 112	Respiratory Therapy I	8
		11

SUMMER SESSION		Credits
*Allied Health 113	Respiratory Therapy II	8
		8

*Course work offered at the Harrisburg Area Community College in Harrisburg, Pa., with clinical experiences at The Williamsport Hospital and Divine Providence Hospital, both in Williamsport.



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Engineer In Training (EIT) Exam Preparation

The Engineer In Training (EIT) courses prepare students to take the EIT examination. The EIT exam is one of the requirements for becoming a registered professional engineer in the State of Pennsylvania. These courses are open to anyone who wants to prepare for the examination. Courses offered are:

Course Title	Course Number
STATICS	EIT 201
STRENGTH OF MATERIALS I	EIT 202
DYNAMICS	EIT 203
FLUID MECHANICS	EIT 204
STRENGTH OF MATERIALS II	EIT 205
ENGINEERING ECONOMICS	EIT 206
ENGINEERING CHEMISTRY	EIT 207
THERMODYNAMICS	EIT 208
ENGINEERING PHYSICS	EIT 209
ENGINEERING ELECTRONICS	EIT 210

The Engineer In Training courses may also be used to meet requirements for the Technology Studies degree (see page 75 for more information on Technology Studies).

Real Estate

All real estate courses offered by the Business and Computer Technologies Division are listed below. The list also shows the courses which can be applied to the State Real Estate Commission's requirements for a salesperson's license or a broker's license.

Course Title	Course No.	Cr.	License for Salesperson	License for Broker
Real Estate Fundamentals	RES 112	3	X	X
Real Estate Law	RES 113	3		X
Real Estate Appraisal	RES 114	3		X
Real Estate Practice	RES 115	3	X	X
Real Estate Financing	RES 116	3		X
Real Estate Management	RES 117	3		X
Real Estate Principles	RES 212	3		X
Real Estate Math	RES 119	3		X
Real Estate Taxes	RES 120	3		X

All prospective real estate salespersons are required to take two (2) standardized real estate courses to qualify for the salesperson's examination. These courses are "Real Estate Fundamentals" and "Real Estate Practice".

To qualify to take the test for a broker's license students need 16 credits in real estate.

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COURSES

COURSE DESCRIPTIONS

Courses are listed alphabetically under the name of the subject—Accounting, Advertising, Advertising Art, Agribusiness, Architectural Technology, Automotive, Aviation, Biology, etc.

The letters and numbers preceding the names of the courses are an identification code for recording purposes. Courses are designated by numbers as follows:

Courses Numbered	Description
001 - 099	Developmental courses which may be required of students on the basis of placement tests. The College awards institutional credit for these courses. This credit will appear on the student's transcript and count in the Cumulative Grade Point Average. However, credits earned in courses numbered 001-099 may not replace any courses or electives required in a given program.
100 - 301	College-level courses applicable to Associate Degree and Certificate programs.
500 - 699	Courses are applicable to Associate Degree and Certificate programs, with the exception of the General Studies program.
700 - 899	Courses applicable to Certificate programs.

Credits

The number given after the course description shows the number of credits awarded for the course. The first number in parentheses shows the number of lecture hours per week. The second number, which appears after the dash, shows the number of laboratory or shop hours per week.

Prerequisite and Corequisite Courses

Prerequisite and corequisite courses are listed in italics at the end of the course description. Prerequisites are courses which must be completed before the student enrolls in the course for which they are listed as prerequisites. Corequisites are courses which the student must take prior to or at the same time as the course for which they are listed as corequisites.

SPECIAL TOPICS COURSES: (1-5 credits)

Any course with the number "299" (for example BCS 299) is a Special Topics Course.

COURSE DESCRIPTION

Special attention to particular abilities, interests of students, and particular topics. Individual guidance in advanced studies. Admission by permission of the instructor, Division Director, and Dean of Academic Affairs.

ACCOUNTING (ACC)

ACC 112
ACCOUNTING I
Introduction to elementary accounting principles. Includes the procedures, terms, theories, and practical applications of proprietorship accounting. Develops the foundation of accounting principles necessary for success in advanced courses and helps prepare the student for employment in business. 3 Cr. (3-0).

ACC 122
ACCOUNTING II
Continues the development of accounting principles as applied to the different forms of business organization. Emphasizes corporate and partnership accounting. 3 Cr. (3-0). *Prerequisite: ACC 112 or Division permission.*

ACC 125
INCOME TAX ACCOUNTING
Familiarizes students with the different rules and regulations regarding Federal and Pennsylvania state income taxes. Tax deductions, credits, exemptions, rates, computation of all types of taxes, and the various forms students should be familiar with are stressed. 3 Cr. (3-0).

ACC 230
MANAGERIAL ACCOUNTING
Presents the analytic skills needed to make decisions based on financial information. Emphasizes the organization of data for decisions, development of sound measurements, and the use of accounting for control and evaluation of economic activity. De-emphasizes the use of financial accounting using the transaction recording process. Course assumes the student has a thorough knowledge of accounting principles and is prepared to analyze the financial summarizations. 3 Cr. (3-0). *Prerequisite: ACC 122 or Division permission.*

ACC 231
COST ACCOUNTING
Includes transactions of a manufacturing business, finding unit costs, finding total cost after processing, and profit through distribution. Three types of cost accounting systems will be discussed in detail: Job Cost, Process Cost, and Standard Cost. 3 Cr. (3-0). *Prerequisite: ACC 122 or Division permission.*

ACC 232
INTERMEDIATE ACCOUNTING I
Detailed in-depth study of financial statements and the fundamental accounting processes. Includes an examination of working capital. 3 Cr. (3-0). *Prerequisite: ACC 122 or Division permission.*

ACC 244
INTERMEDIATE ACCOUNTING II
Deals with noncurrent assets, liabilities, stockholders' equity, and various analytical accounting processes. Includes an in-depth study of funds statement. 3 Cr. (3-0). *Prerequisite: ACC 232 or Division permission.*

ACC 246
AUDITING
Offers a thorough knowledge of auditing through the application of principles and stresses adherence to auditing standards. Internal controls, the field of auditing and public accounting, audit techniques, audit work papers, verification of accounts, reporting the audit and internal auditing are discussed. 3 Cr. (3-0). *Prerequisites: ACC 112, ACC 122.*

ADVERTISING (ADV)

ADV 101
PRINCIPLES OF ADVERTISING
Survey of the history of American advertising and advertising in relation to the economy. Organization and management of advertising; its place in total marketing as well as retail and national advertising; sociological aspects; creative production. 3 Cr. (3-0).

ADVERTISING ART (ART)

ART 111
BASIC DRAWING
The basics of observing and perceiving objects in space. Drawing objects in various ways using a variety of techniques. 3 Cr. (1-6).

ART 121
BASIC PAINTING
An introduction to painting. Emphasizes color, value, form, texture. Emphasizes representational painting but experimentation is encouraged. 3 Cr. (1-6). *Prerequisites: ART 111, ART 231 or permission of the instructor.*

ART 231
COLOR AND DESIGN
Introduction to two dimensional design and color. Studies from nature – and the properties of color, shape, form and space – lead to the discovery of individual solutions to problems in two dimensional design. 3 Cr. (1-6).

ART 232
LETTERING AND LAYOUT
A study of the elements and design of layouts for advertising art. The history, anatomy and design of letters. Emphasizes the proper use of lettering in advertising. 3 Cr. (1-6).

ART 233
INTRODUCTION TO ART
A basic course. Emphasizes the study and understanding of the visual forms of art, painting, sculpture and architecture. Includes functions of design, techniques of execution, and basic principles concerning the visual arts. Also covers the study of major periods of art: Egyptian, Greco-Roman, Medieval, Renaissance and Baroque, nineteenth and twentieth centuries. 3 Cr. (3-0).

ART 241
MEDIA AND TECHNIQUES
Lecture and demonstrations are used to present the various media and techniques used in advertising art, including pen and ink, color, and color separation materials for reproduction, airbrush, computer-aided graphics and art aids. 3 Cr. (1-6). *Prerequisite: GCO 516, permission of instructor.*

ART 242
ADVERTISING DESIGN
Projects in poster design, brochures, illustration and other forms of advertising and editorial media. Includes basic techniques and processes used in preparation of advertising and graphic art for the printer. The following skills are involved: illustration, paste-up, specifying type, overlays, lettering, and layout. 3 Cr. (1-6). *Prerequisite: ART 232, permission of instructor.*

AGRIBUSINESS (AGB)

AGB 111
INTRODUCTION TO AGRICULTURAL BUSINESS
An overview of the broad field of agribusiness and specialized aspects of the field. Field trips to different types of agribusinesses and farms give students a first-hand view of the industry to help them clarify their career goals. In addition, the student will develop a planned agribusiness internship/co-op experience. 4 Cr. (3-3).

AGB 112
SOILS, FERTILIZER, AND AGRICULTURAL CHEMICALS
The formation of land and the physical and biological properties of soil. Emphasizes soil conditions that affect crop production. Composition of fertilizer, its manufacture and use. Includes soil sampling, test report analysis, plant deficiencies, and the reactions of nutrients within plants. Types of chemicals and how to use and apply them properly. 4 Cr. (3-3).

AGB 123
FIELD AND FORAGE CROP PRODUCTION
A study of basic principles related to the culture and production of grain crops and forage. 3 Cr. (2-3).

AGB 124
AGRICULTURAL FINANCING
The principles of financing as applied to agribusiness. A look at the many sources of credit – private and governmental. Obtaining credit and its use. 3 Cr. (3-0).

AGB 125
DAIRY PRODUCTION
The feeding, management, breeding, milking, disease control, and housing of dairy cattle. 3 Cr. (2-3).

AGB 236
ANIMAL PRODUCTION
The basic practical aspects of managing livestock production. Includes beef, swine, sheep, and poultry. 4 Cr. (3-3).

AGB 237
SPECIAL TOPICS IN AGRIBUSINESS
Investigation and study – individually and by the class – in special topics related to the objectives of the Agribusiness program. Examples of topics: Conservation, Horticulture, and Forestry. 3 Cr. (2-3).

AGB 240
INTERNSHIP/CO-OP
Practical experience in a planned, supervised program of work with an agricultural business or farming enterprise. 3 Cr. 200 Hr.

AGB 248
FARM MANAGEMENT
The fundamental principles of management and economics with the emphasis on farm applications. Farm records, their analysis and use in determining progress and farm planning. 3 Cr. (3-0).

AGB 249
AGRICULTURAL SALES AND SERVICE
An introduction to the factors involved in marketing. Includes the psychology of selling, pricing, and presenting the product. Supply and demand, new concepts in marketing, the relationship of customer service to growth. 3 Cr. (3-0).

AIR CONDITIONING AND REFRIGERATION (ACR)

ACR 231
THEORY AND OPERATION OF AIR CONDITIONING AND HEATING SYSTEMS
Advanced course in the design of all air systems, air and water systems, all water systems, central and room air conditioners and heat pumps. Schematic drawings of these systems, operating conditions, pressure, temperature, etc. Instruction in the sizing of duct and correct duct design (as recommended by ASHRA). 4 Cr. (3-3). *Prerequisites: ACR 521, ACR 522.*

ACR 232
INSTALLATION AND SERVICE PROBLEMS—AIR CONDITIONING
Correct methods of installing air conditioning equipment; duct design and sizing to assure proper air flow; installation of duct systems. Electrical and electrical component failure, including refrigeration breakdowns. 5 Cr. (3-6). *Prerequisites: ACR 521, ACR 522. Corequisite: ACR 231.*

ACR 241
AIR MOVEMENT AND VENTILATION
Identification and normal applications of various types of air conditioning equipment. Methods used to take apart and reassemble evaporative coolers; exhaust fans; insulation as a thermal blanket and as soundproofing. 4 Cr. (3-3). *Prerequisite: PHS 500.*

ACR 242
SOLAR HEAT/ENERGY CONSERVATION
Methods of delivering heat to an area, primarily with solar heat collector panels. Methods of heat transfer in space heating and heating domestic hot water. Includes the latest scientific and research data on energy conservation. 3 Cr. (2-3).

ACR 511
INTRODUCTION TO REFRIGERATION
Lectures, demonstrations, and lab assignments introduce concepts of basic refrigeration. Emphasizes the mechanical refrigeration system—including condenser, evaporators, compressor, refrigerant control devices, refrigerants, test equipment and service techniques. 5 Cr. (3-6).

ACR 521
COMMERCIAL REFRIGERATION SYSTEMS
Various types of installations—includes characteristics of items to be cooled in relationship to temperature, humidity, and air circulation. Includes techniques for balancing systems, system capacity, and use of heat load charts. 4 Cr. (3-3). *Prerequisites: ACR 511, ELT 531. Corequisite: ELT 541.*

ACR 522
INSTALLATION AND SERVICE PROBLEMS—COMMERCIAL REFRIGERATION
Various types of installation procedures and service techniques used in commercial refrigeration. Includes piping design, codes, preventive maintenance, and system accessories. 4 Cr. (3-3). *Prerequisite: ACR 511. Corequisites: ELT 541, ACR 521.*

ARCHITECTURAL TECHNOLOGY (ARH)

ARH 102
BASIC ARCHITECTURAL DRAFTING
Fundamentals of architectural drawing and sketching. Use and care of drawing instruments and media. Lettering, orthographic projection principles, preliminary drawing and sketching, preparation of working drawings, exterior and interior finish work, detailing cabinet and mill work. 3 Cr. (2-3).

ARH 111
ARCHITECTURAL GRAPHICS I
Basic architectural graphic media; projection drawings, axonometrics and perspective; color and texture; introduction to the architectural model; basic vocabulary of architectural drawings; composition, space, form, value, texture, shades, shadows. 4 Cr. (1-9).

ARH 112
WORKING DRAWINGS - RESIDENTIAL
Laboratory practice and theory in producing residential architectural working drawings; emphasis on preparation, technique, content, thoroughness, continuity, lettering, presentation, quality. 3 Cr. (1-6).

ARH 113
BUILDING MATERIALS I
A study of the typical materials of building construction, their production, properties, use and performance in various combinations and methods of construction. 2 Cr. (2-0).

ARH 114
ARCHITECTURAL STRUCTURAL SYSTEMS I
The study of forces and equilibrium as related to building support columns and beams. Algebraic and graphic determination of loads, reactions, shear and movement, deflection, loading and buckling, truss design, properties of areas. Theory and design of wood and timber structures. Identification, characteristics and classification of wood. Working stresses; design and beam, column, joints, rafters, planks. 3 Cr. (3-0).

ARH 121
ARCHITECTURAL GRAPHICS II
Architectural rendering in various media; black and white and color problems. Emphasis on developing techniques, style, presentation. 3 Cr. (1-6).

ARH 122
WORKING DRAWINGS - COMMERCIAL
Laboratory practice and theory in producing non-residential architectural working drawings. Emphasizes technique in preparing drawings, content, lettering, line quality, and presentation quality. 3 Cr. (1-6).

ARH 124
ARCHITECTURAL STRUCTURAL SYSTEMS II
The study of forces in equilibrium and their computations and graphic determination of reactions, shear and bending moment. Design theory of structural steel in beams, columns, connecting and joists. The factors involved in designing a structural steel framing system and the use of data in the AISC manual. 3 Cr. (3-0).

ARH 231
DESIGN STUDIO I
Introduction to the relationship of space and function to the environmental needs of people. Application of the principles and methods in solving design problems. Development of visual and graphic skills and techniques. 4 Cr. (1-9).

ARH 232
ENVIRONMENTAL SYSTEMS I
Theory and design of plumbing, heating, air conditioning, and control systems. Sources and design of water supply systems; sanitary and storm systems. Computation of plumbing, heating, and cooling loads. 3 Cr. (3-0).

ARH 233
BUILDING MATERIALS II
Subsurface exploration and foundations. Water and damp-proofing; methods and materials for masonry construction, concrete walls, slabs. Wall, floor, and roof systems; the curtain wall; fireproofing; building codes; architectural hardware. 3 Cr. (3-0). *Prerequisite: ARC 116.*

ARH 235
ARCHITECTURE CAD I
This course is designed for the student to build on previous knowledge in CAD and the introductory to the Design/Build/Manage software. Topics included are on naming conventions, formatting, detailing, overlays, wall construction, schedule generation and systems approach to architecture. 3 Cr. (2-3). *Prerequisite: ARH 125.*

ARH 241
DESIGN STUDIO II
The application of design theory and methods in creative design projects. The projects will involve site analysis, programming and structural integration in the design of more complex problems. 4 Cr. (1-9).

ARH 242
ENVIRONMENTAL SYSTEMS II
Theory and design of electrical service distribution systems. Selection of electrical equipment and fixtures. Electrical heating design. Theory and measurement of light and sound; vertical transportation systems; sound systems. 3 Cr. (3-0).

ARH 244
ARCHITECTURAL STRUCTURAL SYSTEMS III
The theory and design of reinforced concrete beams, columns, slabs, and footings. A study of structural framing systems used in reinforced concrete buildings. 3 Cr. (3-0).

ARH 245
ARCHITECTURE CAD II
This course is designed to allow the student to develop CAD techniques in designing and in the production of working drawings for a building project. Instructions on standard library concepts, and added procedures in auxiliary view, spline, and line functions. The student will use the general features and capabilities of the 3-D module. 2 Cr. (0-6). *Prerequisite: ARH 235.*

ARH 246
SURVEY OF ARCHITECTURE
An overview of architecture from Egypt to twentieth century architects and their works. 3 Cr. (3-0).

ARH 247
ESTIMATING/BUILDING CODES
The preparation of various types of estimates on the cost of a building project as completed by the architectural profession. A study of the contract documents and their relationship in developing an estimate. The interpretation of building codes and how they affect the design of buildings. 2 Cr. (2-0).

AUTO BODY REPAIR (ABC)

ABC 713
BASIC AUTO BODY (8 weeks)
Basic theory and practice in trade fundamentals; body and chassis components; sanding; masking. 7 Cr. (8-16).

ABC 714
METAL WORK (8 weeks)
Metal work; gas welding; metal stretching and shrinking; fasteners; riveting. 7 Cr. (8-16).

ABC 723
AUTO BODY MAINTENANCE (8 weeks)
Exterior and interior cleaning, water and air leaks, rattles, trim work. 7 Cr. (8-16). *Prerequisites: ABC 713, ABC 714.*

ABC 724
PANEL ALIGNMENT (8 weeks)
Panel alignment; front and rear suspension alignment, frame alignment. 7 Cr. (8-16). *Prerequisite: ABC 723.*

ABC 833
METAL WORK AND FILLING (8 weeks)
Straightening metal, panel fabrication, panel replacement; use of fillers. 7 Cr. (8-16). *Prerequisites: ABC 713, ABC 714, ABC 723, ABC 724.*

ABC 834
PAINTING (8 weeks)
Surface preparation, paint application, paint problems, paint equipment. 7 Cr. (8-16). *Prerequisite: ABC 833.*

ABC 843
TOOLS, EQUIPMENT AND COLLISION REPAIRS (8 weeks)
Frame gauges, frame clamps, hydraulic equipment, hand tools and power tools. 7 Cr. (8-16). *Prerequisites: ABC 713, ABC 714, ABC 723, ABC 724, ABC 833, ABC 834.*

ABC 844
PAINTING AND ESTIMATING (8 weeks)
Collision damage, damage appraisal, repair procedures and techniques. 7 Cr. (8-16). *Prerequisite: ABC 843.*

AUTOMOTIVE (AMT)

AMT 510
PRINCIPLES OF ENGINE SYSTEMS I (8 weeks)
Operating principles of internal combustion engines. Two and four stroke cycle. Mechanical components. Precision measuring tools. Engine systems, including induction, valve, fuel, emission control, lubrication and cooling. Fundamentals of fuel metering units. Introduction to ignition systems. Emphasis on operating principles and basic trouble analysis. 6 Cr. (7-15).

AMT 511
PRINCIPLES OF ENGINE SYSTEMS II (8 weeks)
Fundamentals of electricity, magnetism, and electronics. Overview of vehicular electrical systems. Ohm's Law and electron theory. Emphasis on engine related circuits, including charging, cranking, ignition, computer controls, and electronic fuel injection. Use of test meters and oscilloscope for troubleshooting. 6 Cr. (7-15).

AMT 520
PRINCIPLES OF CHASSIS SYSTEMS (8 weeks)
Fundamentals of automotive hydraulics. Theory and basic service techniques in brake systems, steering, suspension, and chassis electrical systems. Wheel balancing, use of brake lathe, tire service methods, introduction to wheel alignment. 6 Cr. (7-15).

AMT 521
PRINCIPLES OF POWER TRAIN AND ACCESSORIES (8 weeks)
Theory and basic service techniques in standard transmissions, clutches, U-joints, C-V joints, drive shafts, axles, transaxles, and differentials. Introduction to air conditioning, heating and selected accessory systems. Overview of automatic transmission operation. 6 Cr. (7-15).

AMT 630
POWER TRAIN AND ACCESSORY SERVICE (8 weeks)
Procedures, techniques and special tools for service and repair of common standard transmissions, transaxles, differentials, U-joints and other selected power train components. Repair of air conditioners, window regulators, and other selected accessories. Introduction to Automatic Transmission Service. 6 Cr. (6-18). *Prerequisite: AMT 521.*

AMT 631
ENGINE SYSTEM SERVICE (8 weeks)
Procedures, techniques and test instruments used for tune-up, minor engine repairs, servicing emission controls, engine electrical repairs, and general under the hood service. Use of oscilloscope, electrical meters, and chassis dynamometer for problem diagnosis. 6 Cr. (6-18). *Prerequisites: AMT 510 and AMT 511.*

AMT 640
CHASSIS SYSTEMS SERVICE (8 weeks)
Procedures, techniques, and special tools used for common repairs of brakes, suspension, exhaust and chassis electrical systems. Wheel balancing and tire service. Steering repairs. Introduction to Wheel Alignment Service. Study of State Inspection Safety Code. Emphasis on State Inspection Repairs. 6 Cr. (6-18). *Prerequisite: AMT 520.*

AMT 641
AUTOMOTIVE TRANSMISSION AND AIR CONDITIONING SERVICE (8 weeks)
Diagnosing transmission problems. Procedures, techniques and special tools used to overhaul transmissions and transaxles. Emphasis on automatic transmissions. Operating principles of automatic transmissions, including planetary gearing and hydraulics. Transmissions selected for overhaul will be common applications. 6 Cr. (6-18). *Prerequisite: AMT 630 or Division permission.*

AMT 642
ENGINE AND ELECTRICAL OVERHAUL (8 weeks)
Diagnosing the need for engine overhaul. Procedures, techniques, and special tools used to overhaul the engine, except for major machining operations. Emphasis on common operations and types of engines. Repair of selected electrical components as appropriate. 6 Cr. (6-18). *Prerequisite: AMT 511 or Division permission.*

AMT 643
WHEEL ALIGNMENT AND ADVANCED CHASSIS SERVICE
(8 weeks)
Methods of wheel alignment and balance. Use of various types of alignment racks and instruments. Experience in diagnosing steering, alignment, and suspension problems. Procedures for overhauling power steering units. Repair or replacement of selected special steering and suspension components. 6 Cr. (6-18). *Prerequisite: AMT 520 or Division permission.*

AVIATION (APC)

Lecture and lab hours shown are for an entire semester.

APC 513
BASIC ELECTRICITY
Basic electrical theory as it applies to Ohm's Law. Application of AC-DC circuits. Use of electrical measuring instruments and diagrams. Principles of aircraft electrical components and power systems. 3 Cr. (45-33).

APC 514
FEDERAL AIR REGULATIONS, RECORDS AND PUBLICATIONS
Federal aviation regulations under parts 43, 65, and 145 as they apply to the privileges and limitations of the mechanic. The use of aircraft maintenance publications, records, and forms. 2 Cr. (24-17).

APC 515
MATERIAL AND PROCESSES
An introduction to precision measurement equipment. Identification and selection of aircraft hardware and materials. The process of heat treating and inspecting materials by visual and non-destructive test methods. 3 Cr. (38-38).

APC 516
AIRCRAFT SERVICING/FLUIDLINERS AND FITTINGS
Identification of aircraft fuel and lubricants, ground operations movement, security and safety precautions necessary with aircraft. Includes the secretion and use of cleaning materials, and procedures for corrosion control. The fabrication and installation of rigid and flexible fluid liners and fittings. 3 Cr. (31-56).

APC 517
WEIGHT AND BALANCE/PHYSICS
The procedure for weighing aircraft, computing the various weights for proper balance and recording this data. Physics topics include the principles of simple machines, fluid and heat. 2 Cr. (21-25).

APC 518
TURBINE ENGINES
Theory and operating principles of aircraft gas turbine engines and the functions of the engine components. 3 Cr. (35-45). *Prerequisites: APC 513, APC 514, APC 515, APC 516. Corequisites: APC 517, MTH 515.*

APC 522
ENGINE IGNITION SYSTEMS
The inspection, service, troubleshooting, repair and theory of reciprocating and turbine engine ignition systems. Includes various related components. 3 Cr. (30-39). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515. Corequisite: EDT 104.*

APC 523
ENGINE INDUCTION AND EXHAUST SYSTEMS
Covers engine induction, ice and rain control, heat exchanges, superchargers, and turbo chargers, and air intake and induction manifolds. Includes the theory, inspection, troubleshooting and repair of these components. Engine exhaust systems and their components are covered. 2 Cr. (16-26). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515. Corequisite: EDT 104.*

APC 524
ENGINE FUEL SYSTEMS
Engine fuel systems including the inspection, service, troubleshooting, and repair of engine fuel pumps and related components. Also covers reciprocating and turbine engine fuel metering systems. 3 Cr. (28-40). *Prerequisites: APC 513, APC 514, APC 516, APC 517, MTH 515. Corequisite: EDT 104.*

APC 525
PROPELLERS
Theory, operating principles and maintenance practices for fixed pitch and constant speed propellers. Also covers propeller governing and synchronizing system, ICR control, and their related functions. 3 Cr. (38-47). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515. Corequisite: EDT 104.*

APC 526
RECIPROCATING ENGINES AND ENGINE INSPECTION
Reciprocating engines including operating principles, nomenclature and inspection of parts and overhaul. The installation and adjustment of magnetos, fuel metering components, propeller and other components necessary for the operation of the engine. Inspection necessary for the safe operation of the engine. 7 Cr. (64-152). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515. Corequisite: EDT 104.*

APC 633
ENGINE COOLING AND LUBRICATING
Details the inspection, service and repair of engine cooling and lubricating systems and components. 4 Cr. (44-39). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 634
ENGINE FIRE PROTECTION AND INSTRUMENTS
Operating principles and service of airframe fire warning and extinguishing systems and smoke and carbon monoxide detection systems. Installation, operation, repair of airframe instrument systems. 2 Cr. (31-19). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 635
ENGINE ELECTRICAL
The operation, installation and repair of engine electrical components. Includes wiring, controls, switches, protective devices, generating and starting units. 3 Cr. (44-34). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 636
AIRCRAFT ELECTRICAL
Study and repair of airframe electrical circuits and components. Includes wiring, controls, switches, protective devices, lighting systems. AC/DC circuits and related electrical accessories. 4 Cr. (46-30). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 637
AIRCRAFT COVERING, FINISHES AND WELDING
The use of various fabrics in the construction of aircraft and the application of paints and dope. The theory and practice of welding and welding methods, and the safe use of welding equipment. 3 Cr. (34-56). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 638
AIRCRAFT ASSEMBLY AND RIGGING/INSPECTION
The theory of flight including fixed wing aircraft and helicopter. Includes assembly of aircraft, installation and rigging controls and surfaces, balancing movable surfaces and alignment checks. Performance of airframe airworthiness inspections and conformity. 3 Cr. (28-56). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 642
AIRCRAFT SHEET METAL AND WOOD STRUCTURE
Details methods for the use of rivets, fasteners, and metal working processes used in construction and repair of aircraft. Includes the inspection and repair of plastics, honey comb, and laminated structure. Also covers wood identification, inspection and repair. 6 Cr. (58-104). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 643
AIRCRAFT LANDING GEAR, HYDRAULICS, PNEUMATICS AND POSITION WARNING
The inspection, operation, service and repair of aircraft landing gears, hydraulics and pneumatics. Landing gears including retraction systems, shock struts, brakes, wheels, tires and steering systems. Hydraulics and pneumatics including power and control systems, pumps, actuators, and special equipment. Position and warning systems including speed and take-off, anti-skid, and landing gear position units. 6 Cr. (74-88). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 644
AIRCRAFT COMMUNICATIONS, NAVIGATION AND INSTRUMENTS
Inspection, checks, and service of auto pilot, approach control, communication, and navigation systems as well as antennas. Includes the installation, inspection and service of aircraft instruments and their systems. 2 Cr. (30-22). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 645
AIRCRAFT ATMOSPHERE CONTROL AND ICE/RAIN CONTROL
The various types of atmosphere control systems. Includes pressurization, heating, cooling, and ventilation as well as oxygen systems. Also covers the various pneumatic and electrical operated ICR and rain control systems. 3 Cr. (37-15). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

APC 646
AIRCRAFT FUEL AND FIRE PROTECTION
This course will cover aircraft fuel tanks and cells, pumps, filters, valves and related components, fuel quantity indicating systems and various fuel management systems. Fire and smoke detection and extinguishing systems, along with their service, troubleshooting and repair, are also included. 2 Cr. (30-22). *Prerequisites: APC 513, APC 514, APC 515, APC 516, APC 517, MTH 515, EDT 104.*

BIOLOGY (BIO)

BIO 103
HUMAN ANATOMY AND PHYSIOLOGY SURVEY
A one-semester survey of human anatomy and physiology designed for non-science majors. Relationships between structures and functions in each body system are emphasized. The interrelationships among all body systems in the maintenance of homeostasis is a unifying concept for this course. Laboratory work complements and reinforces lecture materials. 4 Cr. (3-3).

BIO 111
BASIC BOTANY (HORTICULTURE)
Fundamentals of plant science, plant anatomy, physiology, taxonomy, reproduction, and genetics. 3 Cr. (2-3).

BIO 113
GENERAL BIOLOGY I
Fundamental processes of living organisms. Main concepts of biology—beginning with considerations of the chemical basis of life. Structure, function, and evolution of cells. 4 Cr. (3-3).

BIO 115
HUMAN ANATOMY AND PHYSIOLOGY I
A medically oriented study of the structure and function of the human body. For students specializing in nursing, medical technology and biology. Lecture and laboratory. 4 Cr. (3-3).

BIO 121
BASIC ANATOMY AND PHYSIOLOGY
Human anatomy and physiology; cells, tissues, and tumors; nervous, excretory, reproductive and endocrine systems; diseases; principles of chemistry; microbiology; and physics. For students who need a basic background in anatomy and physiology (e.g., Secretarial Science—Medical). 3 Cr. (3-0).

BIO 123
GENERAL BIOLOGY II
Continuation of BIO 113. Structure, function, interrelationships, and evolution of organisms. 4 Cr. (3-3). *Prerequisite: BIO 113 or permission of the instructor.*

BIO 125
HUMAN ANATOMY AND PHYSIOLOGY II
Continuation of BIO 115. 4 Cr. (3-3). *Prerequisite: BIO 115.*

BIO 201
MICROBIOLOGY
Biology of microorganisms. Includes bacteria, rickettsiae, viruses, fungi, protozoa, and helminths. Relationship between microorganisms and higher forms of life. 4 Cr. (3-3). *Prerequisite: BIO 123.*

BIO 203
GENERAL BOTANY
Introduction to plant physiology, plant life cycles, and plant taxonomy. 4 Cr. (3-3). *Prerequisite: BIO 123.*

BIO 208
ECOLOGY
Basic principles of the relationships between plants and animals and their environments. Physical factors, energy and chemical cycles in the ecosystem, population and community characteristics, ecological succession, aquatic and terrestial ecology. Local terrestrial and aquatic environments. 4 Cr. (3-3). *Prerequisite: One semester of college level biology.*

BIO 290
SPECIAL STUDIES IN BIOLOGY
Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. (1-3, laboratory as required).

BROADCASTING (BRC)

BRC 114
AUDIO IN MEDIA
An introductory course in the use of audio equipment in mass communications. Emphasizes components of an audio production chain and how these components can be used for various audio applications. Provides "hands-on" experience with tape machines, turntables, mixing boards, microphones, and editing equipment. Includes proper maintenance of equipment. 3 Cr. (3-0).

BRC 126
INTRODUCTION TO RADIO STATION OPERATION
Working as part of the staff of an operational radio station, students do basic production, writing and announcing for their department and are assigned at least one announcing shift per week. Workshops on refined production techniques will be held both within departments and for station staff. Emphasizes "hands-on" application of theories and skills learned in the introductory audio course. 2 Cr. (0-6). *Prerequisite: BRC 114.*

BRC 223
BROADCAST WRITING
This practical writing course combines the theory of writing for aural and visual media with "hands-on" experience. Includes the basic elements of audio and video copy, and explores in some detail such applications as news, promotional announcements and program length copy. 3 Cr. (3-0). *Prerequisites: BRC 114, JOU 111.*

BRC 233
BROADCAST ANNOUNCING
Students develop announcing techniques for many of the jobs in the broadcast industry and allied fields. Includes announcing of news, sports, interviews, musical selections and shows, and instructional/industrial programming. Emphasizes the principles of communication underlying those skills. 3 Cr. (3-0). *Prerequisites: BRC 114 and ENL 202.*

BRC 236
RADIO STATION OPERATION AND MANAGEMENT
Students assume a management position and a subordinate position as they operate and manage the college radio station. Students run and attend department meetings. Weekly student staff meetings are held to assess staff performance and analyze achievement and needs. Periodic workshops develop reproduction skills for remotes, develop management and employee skills, and sharpen interview/cover letter skills. 2 Cr. (0-6). *Prerequisite: BRC 126.*

BRC 242
BROADCAST MANAGEMENT PRACTICUM
Concentrated practical experience as a supervisor in a small radio station—the College's station. Includes weekly lecture/seminar session which develops skills in conducting station staff meetings and managing broadcast sales. Students supervise and assist in training other students in various aspects of radio station operation and complete a station project with the help of their staff. 3 Cr. (1-6). *Prerequisite: BRC 236.*

BUILDING CONSTRUCTION TECHNOLOGY (BCT)

BCT 110
SITE PREPARATION AND LAYOUT
Introduction to site preparation and layout of structures. The use of the builder's level, level rods, tapes and surveying equipment. Triangle calculations, differential leveling and erection of batter boards and markers are included in this course. 2 Cr. (1-3).

BCT 114
WOOD CONSTRUCTION I
Basic principles and skills used in hand and machine woodworking operations. A study of materials and fasteners used in woodworking. Types of and application of framing for residential and light commercial construction. 5 Cr. (2-9).

BCT 115
CONSTRUCTION MATERIALS
A study of building materials used in residential and commercial construction, their production, properties, and use. Special fasteners, hardware, and compounds used for construction. 2 Cr. (2-0).

BCT 116
BASIC WOODWORKING
The technical knowledge and skills of hand and machine woodworking. Theory and lab assignments in materials, use of woodworking tools and equipment, shop safety, project planning and finishes. Methods and techniques of applying woodworking skills in a trade or professional area. 2 Cr. (1-3).

BCT 120
BLUEPRINTS, SPECIFICATIONS, AND CODES
Techniques in reading and interpreting blueprints and specifications. Instruction in reading plan views, elevations, and details typical of working drawings. Emphasis is placed upon specifications and their relationship to working drawings. 2 Cr. (2-0).

BCT 125
WOOD CONSTRUCTION II
Advanced framing practices including cantilevers, patio-decks, and post and beam construction. Roof framing principles and applications for gable, hip and intersecting roof designs. 5 Cr. (2-9).

BCT 230
COMMERCIAL CONSTRUCTION I
Introduction to the methods of light and heavy commercial structures. Metal framing materials, trusses, laminated beams and prefabricated materials are included. Reinforced concrete, masonry and steel structures are discussed. 2 Cr. (2-0).

BCT 233
MASONRY CONSTRUCTION I
Introduction to masonry construction materials and methods. The laying out of block and brick construction. 5 Cr. (2-9).

BCT 235
WOOD CONSTRUCTION III
Develop skills in the selection and installation of siding and roofing materials. Installation of windows, exterior doors, garage doors, and cornice work. 5 Cr. (2-9).

BCT 236
INTERIOR FINISH MATERIALS
Modern finish materials and methods used to apply finish materials: drywall, plaster, tile, paneling, wallpaper, flooring, linoleum, carpet and ceiling treatments. 4 Cr. (1-9).

BCT 237
HOME REMODELING I
An introduction to the evaluation, planning and implementation of residential remodeling. Techniques used in evaluating and planning bathrooms, kitchens, additions and basement conversions. Remodeling materials and methods of construction are covered in this course. 2 Cr. (2-0).

BCT 238
CONCRETE CONSTRUCTION
Principles of concrete design—water-cement ratio, proportions of ingredients, reinforced concrete, concrete footers and walls, finishing with hand and power trowel equipment, proper methods of curing and testing concrete. 3 Cr. (1-6).

BCT 240
COMMERCIAL CONSTRUCTION II
Principles and methods of commercial construction applied to construction projects in the community and shop. 2 Cr. (0-6).

BCT 244
CONSTRUCTION ESTIMATING AND MANAGEMENT
Study of construction estimating and project management for both residential and commercial structures. Students learn how to calculate construction costs and develop construction schedules. 2 Cr. (2-0).

BCT 245
PRACTICAL CONSTRUCTION EXPERIENCE
Use of the knowledge and skills acquired in the construction curriculum. Supervised permanent projects on and around campus. When practical, the student participates in all stages of a project—from planning through construction. 3 Cr. (0-9).

BCT 246
MASONRY CONSTRUCTION II
A continuation of BCT 233. Study and application of advanced methods and materials used in brick and stone masonry construction. 4 Cr. (1-9).

BCT 247
WOOD CONSTRUCTION IV
Principles and methods of interior carpentry construction. Includes the installation of interior trim, doors and stair building. Advanced woodworking techniques and cabinetry. 5 Cr. (2-9).

BCT 248
HOME REMODELING II
The application of home remodeling principles and skills on projects in the community and shop. 4 Cr. (1-9).

BCT 254
CARPENTRY FOR THE TRADES
Theory and laboratory assignments in basic residential and commercial carpentry. The technical aspects of frame construction, construction materials, use of carpentry tools and equipment, and job safety. Methods and techniques of applying carpentry skills in the trade areas. 2 Cr. (1-3).

BUSINESS MANAGEMENT (MGT)

MGT 110
PRINCIPLES OF BUSINESS
Introduction to the various types of business organizations, from a legal as well as administrative viewpoint. Emphasizes terminology as applied in such fields as economics, finance, marketing, and business law. Includes basic concepts of management—from the establishment of objectives through planning, organizing, policy formulation, taking action, measuring and evaluating, and performance improvement. 3 Cr. (3-0).

MGT 111
BUSINESS MATHEMATICS
Fundamentals of mathematics as applied in addition, subtraction, multiplication, and division. The use of percent, interest, depreciation and installment buying in the modern business world. 3 Cr. (3-0).

MGT 125
FINANCE
Includes valuation principles, risk assessment, analysis of financial statements, working capital management, alternate financing strategies, capital budgeting, optimum financial decision making, and analysis involving the cost of capital. Includes the analysis of current market trends and projections. 3 Cr. (3-0). *Prerequisites: ACC 112, ACC 122 or Division permission.*

MGT 230
BUSINESS COMMUNICATIONS
Application of communication skills: listening, reading, writing, and speaking accurately, briefly, and clearly. Students are trained to write all types of business communications. Includes the techniques of personal and interpersonal relations to prepare the student to perform well and to advance in a career. 3 Cr. (3-0).

MGT 231
BUSINESS LAW I
Introduction to the judicial process, the social implications of law, the roles of government and labor unions in the formulation of business laws. In-depth study of rights and obligations as they apply to contract law. 3 Cr. (3-0).

MGT 235
BUSINESS PSYCHOLOGY
Psychological principles as applied in modern business. Encourages the proper attitudes toward work and people. Gives the student an awareness of human relations skills needed to be an efficient employee and an effective leader, both on and off the job. 3 Cr. (3-0).

MGT 237
BANKING AND INVESTMENTS
Introduction to banking and investments. Explains how institutions can best meet the needs of society. Provides a foundation for understanding how banks operate today, and why and how they have evolved to their present state. 3 Cr. (3-0).

MGT 238
INSURANCE
Structure and practices of the insurance field. The uses of various types of insurance policies and their importance for personal and business success are stressed. 3 Cr. (3-0).

MGT 241
BUSINESS LAW II
Based on the objectives of Business Law I. Provides an in-depth study of the laws of agency and employment relations, commercial paper, personal property, bailments, and sales. 3 Cr. (3-0). *Prerequisite: MGT 231.*

MGT 247
SMALL BUSINESS MANAGEMENT
Introduction to the problems of owning and operating a business of one's own. Necessary personal characteristics, problems involved in buying and initiating a new business, and the activities of management are covered. 3 Cr. (3-0).

MGT 248
SUPERVISION AND HUMAN RELATIONS
Duties and responsibilities of the first-line supervisor and manager who holds up to a middle-level management position are studied from a behavioral point of view and in relation to how he/she influences others to accomplish organizational goals. Includes motivation, job enrichment, rules of leadership, and interpersonal relationships. 3 Cr. (3-0). *Prerequisite: MGT 110 or Division permission.*

CHEMISTRY (CHM)

CHM 100
FUNDAMENTALS OF CHEMISTRY
Introduction to basic concepts of inorganic and organic chemistry. Essentially non-mathematical. For students who have never had chemistry or whose background is very weak. Prepares students for CHM 105 or CHM 111. 4 Cr. (3-3). *Prerequisites: None, but working knowledge of basic algebraic manipulations is desirable.*

CHM 109
CHEMISTRY FOR GRAPHIC ARTS
Introductory treatment of basic concepts of chemistry as related to graphic arts processes, with major emphasis on the chemistry of photography. Applications of these concepts will involve laboratory work. Intended for Graphic Arts students. 3 Cr. (3-0).

CHM 111
GENERAL CHEMISTRY I
Principles of chemistry with emphasis on inorganic aspects. Intended for science majors but may be taken by non-science majors desiring to fulfill a lab science requirement. Prepares the student for pursuit of a degree in chemistry. 4 Cr. (3-3). *Prerequisites: High school algebra or equivalent; high school chemistry highly desirable.*

CHM 121
GENERAL CHEMISTRY II
Continuation of CHM 111. Intended for science majors but may be taken by non-science majors desiring to fulfill a lab science requirement. Involves extensive algebraic calculations. 4 Cr. (3-3). *Prerequisites: CHM 111, or high school chemistry and permission of the instructor.*

CHM 122
INTRODUCTORY ORGANIC CHEMISTRY
Introduction to the major classes of organic compounds, with emphasis on molecular structures and types of reactions. Includes a brief introduction to biochemistry. Intended for science students (including health science) who need only one term of organic chemistry at the introductory level, or who desire to gain background before attempting a full-year course in organic chemistry. Also may be taken by non-science majors to fulfill a lab science requirement. 4 Cr. (3-3). *Prerequisites: High school chemistry or permission of the instructor.*

CHM 203
ORGANIC CHEMISTRY I
The major classes of organic compounds. Emphasizes molecular structure and reaction mechanisms. Intended for science majors. 4 Cr. (3-3). *Prerequisites: CHM 111 or CHM 122, or high school chemistry with permission of the instructor.*

CHM 204
ORGANIC CHEMISTRY II
Continuation of CHM 203. 4 Cr. (3-3). *Prerequisites: CHM 203 or equivalent.*

CHM 290
SPECIAL TOPICS IN CHEMISTRY
A flexible course to meet special needs or interests of science or non-science students. Lectures may be supplemented with lab work as needed. 1 to 4 Cr. *Prerequisite: Permission of the instructor.*

CIVIL ENGINEERING TECHNOLOGY (CET)

CET 100
INTRODUCTION TO SURVEYING
Introduction to surveying; use and care of instruments; simple surveys with compass, transit level and tape; plan and profile; interpretation of deed descriptions; contours; slope; bearing computations. 1 Cr. (0-3).

CET 111
MATERIALS OF CONSTRUCTION
Properties of concrete, aggregates, asphalt, steel, wood, plastics, clay products and miscellaneous construction materials. Methods of testing and sampling construction materials. Applying knowledge of and data on materials in designing structures. 2 Cr. (2-0).

CET 112
ENGINEERING DRAWING
Use of engineering drawing instruments; lettering; geometric construction; orthographic projection; dimensioning; sketching. Architectural drawing including plans, elevations, details, and site plans. Structural drawing including uses and detailing for wood, concrete, and steel structures. Computer-aided drafting fundamentals and applications. 3 Cr. (1-6).

CET 113
INTRODUCTORY SURVEYING
Introduction to surveying; use and care of instruments. Simple surveys with compass, transit, level and tape. Notekeeping; computations; preparing planimetric map. 2 Cr. (1-3).

CET 121
PLANE SURVEYING
Theory and practice of plane surveying; traverses and elementary triangulation; three-wire differential, trigonometric and reciprocal leveling; stadia and plane table surveys; adjustment of instruments; analytical geometry for surveying. 4 Cr. (1-9). *Prerequisites: CET 113, MTH 103. Corequisite: MTH 104.*

CET 122
TOPOGRAPHIC DRAWING & CARTOGRAPHY
Use of conventional signs in mapping. The construction of large-scale topographic maps, logical contouring, profiles, photographic and map interpretation. Methods of plotting, use and construction of small scale maps, earth's coordinate system, map projections, enlargement and reduction of maps, scribing techniques, photographic color separation, typography, thematic maps, reproduction, and processing. 3 Cr. (1-6). *Prerequisite: CET 112.*

CET 231
ROUTE SURVEYING
Highway curves (horizontal and vertical); field stake out cross sections; slope staking; determination of earthwork; plan and profile; profile leveling; polaris and solar observations for bearing; route location on topographic map. 4 Cr. (1-9). *Prerequisite: CET 121.*

CET 232
ORIGIN, DISTRIBUTION & BEHAVIOR OF SOILS
Geologic origin of soils; minerals, rocks, rock structures, weathering, glaciation, erosion and deposition. Distribution of soils in North America; residual, glacial and water-wind deposited soils. Soil characteristics and behavior; engineering classification, volume-weight relationships, physical properties, supporting capabilities for foundation elements and sampling methods. 3 Cr. (2-3). *Prerequisite: MTH 104. Corequisite: PHS 115.*

CET 233
STATICS
Basic principles of statics; coplanar and non-coplanar force systems; friction; centroids and moments of inertia; hydrostatic pressures and loads. 3 Cr. (3-1). *Prerequisite: MTH 104.*

CET 234
HIGHWAY ENGINEERING TECHNOLOGY
Highway systems, organization and planning; right-of-way; driver, vehicle and road characteristics; highway design, traffic engineering; drainage; engineering economics; pavement design; construction and maintenance. 3 Cr. (3-0).

CET 242
FLUID MECHANICS
Mechanics of fluids; fluid flow in conduits and around bodies; liquid flow in open channels; friction and energy loss; fluid measurements; pumps; similitude and dimensional analysis. 3 Cr. (2-3). *Prerequisites: PHS 100, CET 233.*

CET 243
STRENGTH OF MATERIALS
Engineering materials and properties; stress and deformation; shear and moment in beams; stresses in beams; beam design for wood and steel; beam deflection; statically indeterminate beams; combined stresses; column design. 3 Cr. (3-0). *Prerequisite: CET 233.*

CET 244
PHOTOGRAMMETRY
Use and application of aerial photographs; mapping by photogrammetric methods; geometry of aerial photographs; stereoscopy; overlapping aerial photographs; aerial triangulation; flight planning; photographic principles, tilted aerial photos; cost estimation; contracts and specification; remote sensing. 3 Cr. (2-3). *Corequisite: CET 122.*

CET 245
ADVANCED SURVEYING
Horizontal and vertical control surveys; triangulation and level nets; three point solution; planning and estimating from topographic maps; state plane coordinate systems, public land surveys; boundary surveys, electronic distance measurement; theodolites. 2 Cr. (1-3). *Corequisite: CET 121.*

COMPUTER-AIDED DRAFTING (CAD)

CAD 100
COMPUTER AIDED DRAFTING
An introduction to the function keyboard, alphanumeric keyboard, scope, tablet and mouse. Students will also learn how to establish points, circles, and lines. Several functions involving these elements such as erasing, changing types of lines, copying, transferring, off-setting, enlarging, mirroring, moving, rotating, storing, recalling, and identifying will be taught. Notes and dimensions will be applied to appropriate views and plotting procedure will be introduced. 3 Cr. (2-2).

COMPUTER INFORMATION SYSTEMS (CSC)

CSC 102
INTRODUCTION TO MICROCOMPUTERS
Covers use of the microcomputer as a tool for solving practical problems. Introduces non-computer science students to computer technology concepts and the operation and management of a typical "personal" computer. Students will use application software for word processing and electronic spreadsheet analysis, and the BASIC language for programming computer solutions to a variety of problems. 3 Cr. (3-0).

CSC 103
INTRODUCTION TO COMPUTERS WITH FORTRAN
Presents data processing concepts, methods and applications through the medium of the FORTRAN IV programming language. Topics include computer system history, principles and operations, programming language structure, problem analysis and flowcharting, and computer solution of numerical problems using the FORTRAN IV language. 3 Cr. (3-0).

CSC 104
MICROCOMPUTER FUNDAMENTALS
Provides an overview of microcomputer operations and applications. Students use the IBM Personal Computer to explore such topics as microcomputer operation and control, word processing, data management and electronic spreadsheet. The course assumes no previous knowledge of microcomputers and is a prerequisite for CSC 105, CSC 106 and CSC 107. 1 Cr. (1-1).

CSC 105
WORD PROCESSING FOR MICROCOMPUTERS
An introduction to word processing on the microcomputer. Students use a popular word processor software package to learn the concepts and commands needed to create, edit and print documents. 1 Cr. (1-0). *Prerequisite: CSC 104 or the equivalent.*

CSC 106
DATA BASE FOR MICROCOMPUTERS
An introduction to data management software in a microcomputer environment. Students use a popular data management software package to explore such typical applications as mailing lists, inventories, budgets and other business functions. 1 Cr. (1-0). *Prerequisite: CSC 104 or the equivalent.*

CSC 107
SPREADSHEET FOR MICROCOMPUTERS
An introduction to electronic spreadsheets in a microcomputer environment. Using a popular spreadsheet software package students explore such typical business applications as budgeting, forecasting and planning. 1 Cr. (1-0). *Prerequisite: CSC 104 or the equivalent.*

CSC 109
COMPUTER OPERATIONS I
This course is an introduction to the many and varied operations of a computer installation. Topics include operation of a microcomputer, operating CRT's, line printers, console operations, applications software and data entry concepts. 3 Cr. (3-0).

CSC 112
PROGRAMMING IN PASCAL
Thorough coverage of the PASCAL language and its implementation under RSTS/E on the PDP 11/70. The strong compatibility between PASCAL, Top-Down Design, and Structured Programming will be emphasized and integrated in all programming assignments. Programs will be assigned from a variety of disciplines in order to acquaint students with the power and versatility of the PASCAL language. 3 Cr. (3-0). *Corequisite: CSC 118.*

CSC 118
FUNDAMENTALS OF COMPUTER SCIENCE
Covers the terminology, concepts, system operating procedures and problem-solving techniques that are fundamental to the field of computer science and required for further coursework in programming languages and design techniques. Covers mainframe and microcomputer operation in depth. Special emphasis on developing the student's ability to understand as well as design the logical structures underlying a variety of data processing applications. 3 Cr. (3-0).

CSC 120
BUSINESS COMPUTER APPLICATIONS
Emphasizes the use of the computer in typical business applications. Concentrates on the use of computer-based information systems to provide information for effective management decision making. Includes database concepts, data entry, man/machine interaction and data retrieval concepts. The course will use both mini and microcomputers. 3 Cr. (3-0). *Recommended prerequisites: CSC 118 and ACC 112.*

CSC 125
DATA STRUCTURES
Covers stacks, queues, linked lists and trees. Data structures will first be introduced as abstract concepts, then their physical implementations and operations will be developed and applied. Includes basic techniques for design and analysis of efficient algorithms for internal and external sorting/merging/searching. Additional topics include hashing, dynamic storage allocation, data compaction and recursion. Students will write PASCAL application programs to implement data structures. 3 Cr. (3-0). *Prerequisite: CSC 112.*

CSC 128
COBOL PROGRAMMING I
Covers the COBOL computer language, language elements and division, program writing, execution, diagnostics, advanced programming concepts and techniques. Stresses documentation—including a written problem statement—any required formula development, printer spacing for chart layouts, and the appropriate terminology for programming, card/tape and/or disc record layout, internal memory requirements, and a program flowchart. 3 Cr. (3-0). *Prerequisite: CSC 118.*

CSC 130
COMPUTER OPERATIONS II
This course is an extension of Computer Operations I and emphasizes software operations. Topics include computer hardware, concepts of mainframe operations, the use of EDP manuals, documentation, JCL concepts, the actual functioning of a computer center, current terminology, recovery techniques from hardware and/or software errors, and concepts of disk and tape processing. 3 Cr. (3-0). *Prerequisite: CSC 109.*

CSC 131
COMPUTER OPERATIONS INTERNSHIP
Students are assigned to computer installations for practical experience in operations. The student will receive on-the-job training in an area industrial or business computer center. 1 Cr. (0-4). *Prerequisite: CSC 109.*

CSC 230
COMPUTER SYSTEMS WITH ASSEMBLER
A survey of technical topics related to computer systems with the emphasis on the relationships between hardware architecture, system software and the assembly language. Includes an introduction to assembly language and the architecture of processors and storage systems. 3 Cr. (3-0). *Prerequisites: CSC 118 and a programming language.*

CSC 231
PROGRAMMING IN RPG
REPORT PROGRAM GENERATING (RPG) programming, including writing, compiling and executing RPG programs. The programs written for this course are based on business applications and business oriented problems. Topics include sequential disc files, indexed disc files, tables, arrays, subroutines and interactive programming techniques. 3 Cr. (3-0). *Prerequisites: CSC 118 and a programming language.*

CSC 232
PROGRAMMING IN BASIC
Covers the BASIC programming language in detail, adding to and developing concepts presented in CSC 118. Detailed discussion of the BASIC language, including operating procedures of a time-sharing system. Interactive programming techniques will be stressed through such topics as data conversion, string functions, sequential I/O, virtual I/O and record I/O. Programming techniques will be discussed. The course is geared to business data processing. A special project may be required. The course will use a mini or microcomputer. 3 Cr. (3-0). *Prerequisite: CSC 118.*

CSC 235
SYSTEMS ANALYSIS AND DESIGN METHODS
A systematic approach to the analysis and design of computer information systems. The course follows the systems development life cycle, emphasizing the system documentation tools and techniques used in each phase. Introduction to both classical and structured approaches for describing process flows, data flows, data structures, file designs, input and output designs and program specifications. Discussion includes information gathering and reporting activities and the transition from system design to initial operations. 3 Cr. (3-0). *Prerequisites: CSC 118 and CSC 128.*

CSC 238
COBOL PROGRAMMING II
Introduction to structures used to represent the logical relationship between elements of information and to the techniques used to work with information structures using tape and disc storage. Students examine how a complex computer programming task can be subdivided for maximum clarity, efficiency, and ease of maintenance and modification. The concept of programming style permeates most of the material presented. Careful verification of program operation and documentation of programs are emphasized. 3 Cr. (3-0). *Prerequisite: CSC 128.*

CSC 239
FORTRAN WITH PLOTTING
An introduction to FORTRAN language programming as applied to business and mathematics problems. Includes subprograms, table handling and the use of the plotter to draw graphics. 3 Cr. (3-0). *Prerequisites: CSC 118 and a programming language.*

CSC 240
FILE AND DATABASE PROCESSING
An introduction to application program development in a database environment. Emphasizes loading, modifying and querying the database using a host language and the DBMS query facilities. Also covers the logical-physical organization of data and random access devices. 3 Cr. (3-0). *Prerequisite: CSC 125.*

CSC 244
ADVANCED ASSEMBLY LANGUAGE
An in-depth study with advanced applications of the assembly language. Includes system software. This course will be of particular benefit to students interested in system programming. 3 Cr. (3-0). *Prerequisite: CSC 230.*

CSC 248
APPLIED SOFTWARE DEVELOPMENT
Integrates computer programming and systems development concepts, principles and practices into a comprehensive system development project. A team approach is used to analyze, design and document realistic methods. Project scheduling and control techniques, format presentations and group dynamics are introduced into the solution of information systems problems. 3 Cr. (3-0). *Prerequisites: CSC 235, CSC 238.*

COMPUTER-INTEGRATED MANUFACTURING (CIM)

CIM 101
BASIC MACHINE TOOL PROGRAMMING
Basic numerical control introduction. Programming basic two (2) axes machines. Operations on two (2) axes machines involving turning, facing, drilling, reaming, milling, using manual data input (MDI). Includes introduction to cartesian coordinate system and system safety. 3 Cr. (2-3).

CIM 121
NC/CNC PROGRAMMING
Theory and practice in CNC part programming and editing using APT language. Program writing and tape preparation for two (2) and three (3) axes machines. Program and tape verification using a plotter. 3 Cr. (2-3).

CIM 122
NC/CNC MACHINE OPERATIONS
A course that emphasizes set-up and operations on CNC milling and turning centers. Practice and theory is given on straight, taper, radius turning, milling, drilling, boring, grooving, threading, tapping and contouring. Applications include manual data input (MDI) tool setting and fixtures. 4 Cr. (1-9).

CIM 201
GRINDING/HEAT TREATMENT
Theory and practice in surface, cylindrical and interval grinding practices. Theory and practice in hardening and tempering various metals. 5 Cr. (3-7).

CIM 202
ADVANCED PROGRAMMING
This program is designed to give students skills in the latest programming options including fixed cycles, subroutines, looping and nesting. Sophisticated programs will be developed using graphics and verified by plotting. 3 Cr. (2-3). *Prerequisites: CIM 121, CIM 122.*

CIM 203
SPECIAL MACHINING PROCESSES
Theory and practice in electrical discharge machining (EDM) and electrical chemical grinding (ECG). 2 Cr. (1-3).

CIM 204
TOOLING
Theory and practice in grinding of all types of tools and cutters including high speed steel (HSS) and carbide end mills. 3 Cr. (2-3). *Prerequisite: Machining background.*

CIM 221
CNC APPLICATIONS
Hands-on operational experiences including machine parameters, tool offset, axial force, torque, feeds and speeds, tool geometry and address format. Operation of different machine tools involving a turning and milling center. Fundamentals of microprocessors used in programming and interfacing. 3 Cr. (2-3). *Prerequisites: CIM 121 and CIM 122.*

CIM 222
ROBOTIC APPLICATIONS
Study of robot classification and application in different environments. Hands-on experience including motion control, safety, and effectors and tooling. Basic programming and operation of a Cincinnati robot. 3 Cr. (2-3). *Prerequisite: Machining experience and basic programming. Admission with consent of instructor.*

CIM 223
COMPUTER-AIDED DESIGN AND MANUFACTURING (CAD-CAM)
Study of fully-computerized systems of design and manufacturing of machined parts. Hands-on experience includes system operation modes, command entry methods, tool and chip removal, verification, graphics, editing and use of automatic programmed tooling (APT). 3 Cr. (2-3). *Prerequisite: CIM 121, CIM 122.*

CIM 224
COMPUTER-INTEGRATED MACHINING (CIM)
Techniques for implementing the most appropriate manufacturing processes using computer-aided processes, robotics and numerical control. Operation of machining cells involving turning, milling and grinding. 3 Cr. (2-3). *Prerequisites: Machining background, CIM 121, CIM 122.*

CIM 225
MATERIALS HANDLING/AUTOMATED GUIDED VEHICLES (AGV)
Study of handling devices which link machining centers and machining cells. Hands-on experience includes material handling, warehousing and inventory control and cycle time. Programming will be completed by student in order to schedule materials, pallets and tooling to work cells. 3 Cr. (2-3).

COOPERATIVE EDUCATION (CED)

If co-op is taken in addition to the courses normally required for completion of their program of study, students will register for co-op experience using the numbers below. If co-op experience is elected in place of the course(s) within a curriculum, the student will register for the course(s) to be replaced using the course identification number followed by the letter "C". Example: ABC 833C Metal Work and Filling. This indicates that the student is seeking credit for ABC 833 through participating in a co-op experience.

CED 101
COOPERATIVE EDUCATION I
Designed for the associate degree or certificate student wishing to participate in a related educational work experience as an elective. The student will be placed with an approved employer in a job related to the skills and knowledge offered in his or her program. Variable 1-7 Cr.

CED 102
COOPERATIVE EDUCATION II
Designed for the associate degree or certificate student who has successfully completed CED 101 and wishes to participate in a second program of related educational work experience with the same or a new employer. Variable 1-7 Cr.

CED 103
COOPERATIVE EDUCATION III
Designed for the associate degree or certificate student who has successfully completed CED 101 and CED 102 and wishes to participate in a third program of related educational work experience with the same or a new employer. Variable 1-7 Cr.

CULINARY ARTS
See Food & Hospitality (FHD)

DAIRY HERD MANAGEMENT (DHM)

DHM 711
SOILS AND SOIL FERTILITY
Students will study the different soil types found in Pennsylvania and relate soil types to fertility, plant growth and tillage. Will include the study of fertilizers, soil test reports, chemical applications related to texture and economically maximizing production. Lab sessions will include soil testing, lime and fertilizer selection and application and conservation. 3 Cr. (2-3).

DHM 712
FORAGE PRODUCTION
The course emphasizes the forage program as a vital part of the dairy operation. Includes forage production and handling and the economic importance of forage to the feeding program. Crops covered include corn — for silage and grain — alfalfa, haylage and dry hay, small grains and grasses. Students will participate in field crop planning as well as equipment operation and maintenance and weed control. 3 Cr. (1-6).

DHM 713
DAIRY FEEDING AND MANAGEMENT
Topics include feeding dairy animals for growth, reproduction and production. Analysis of forage, nutrient content of feeds and nutrient requirements of all dairy animals will be covered. Students will develop and balance rations and apply their knowledge in developing different feeding systems. 3 Cr. (1-6).

DHM 714
DAIRY HERD HEALTH
Stresses sanitation and hygiene in promoting animal health. Causes, symptoms and methods of prevention and control of common diseases will be covered. During lab practice students will perform less complicated veterinary practices. Students will practice day-to-day herd management skills needed for herd health. 3 Cr. (2-3).

DHM 721
FINANCING DAIRY ENTERPRISES
The course covers financial aspects of dairy farming — including capital requirements, appraisal, sources of financing and credit applications. Major farm lending institutions will be emphasized. Financing as a management tool for the dairy operation will be covered. 3 Cr. (3-0).

DHM 722
MILKING MANAGEMENT
Udder anatomy, milk secretion, milking machine function and use, sanitation, mastitis control and prevention. Management systems related to different facilities and equipment options will be discussed. Includes costs of operation and maintenance. 3 Cr. (1-6).

DHM 723
FARM RECORDS, ANALYSIS AND COMPUTERS
The course stresses management principles based on sound, properly recorded farm business transactions. Exercises concentrate on development of accurate records related to dairy farm operations. Records are then analyzed for taxation, depreciation, net worth and loans. Strengths and weaknesses will be identified. Computers will be used during various portions of the course. 3 Cr. (3-0).

DHM 724
ANIMAL BREEDING AND REPRODUCTION
Emphasizes reading the genetic qualities of sires and determining herd deficiencies through judging and classifying cows. Includes animal genetics, breeding systems and reproductive organs. Covers breeding records, heat detection and artificial insemination procedures. 3 Cr. (1-6).

DHM 725
REPLACEMENT STOCK MANAGEMENT
Course stresses the economic importance of raising quality herd replacements. Management of young stock will include animals from calves to heifers ready to enter the milking herd. A wide range of practices will be discussed — including housing, health, identification and feeding. 3 Cr. (2-3).

DENTAL ASSISTING AND DENTAL HYGIENE (DEN)

DEN 100
INTRODUCTION TO DENTAL ASSISTING
Orientation to the dental environment, materials, instruments, techniques of asepsis, time and motion skills, and fundamentals of four-handed dentistry. 5 Cr. (3-6).

DEN 101
INTRODUCTION TO DENTAL HYGIENE
An introduction to fundamental concepts and techniques of primary preventive measures. Includes use and care of dental equipment. 4 Cr. (2-6).

DEN 102
ORAL ANATOMY AND HISTOLOGY
The development and structure of the oral and facial regions with the emphasis on dental anatomy. 3 Cr. (3-0).

DEN 120
DENTAL MATERIALS
Principles and manipulation of the physical, mechanical and chemical properties of dental materials. 2 Cr. (1-3). *Prerequisites: DEN 101, DEN 102, CHM 107.*

DEN 121
PERIODONTICS I
A self-paced programmed course. Subject matter is presented through tapes, slides and manuals. Covers normal and healthy periodontium. The biological and clinical basis for the future understanding of periodontal disease. The pathology of the periodontium, including types, causes and prevention. 1 Cr. (0-3). *Prerequisites: DEN 101, DEN 102.*

DEN 122
CLINICAL DENTAL HYGIENE I
Lectures are combined with practical experience in the clinic. Students begin to provide preventive oral health services. 4 Cr. (1-9). *Prerequisites: DEN 101, DEN 102.*

DEN 123
DENTAL RADIOLOGY
The physics of radiation and radiation biology are related to the principles, techniques and interpretation of intra and extraoral radiographs. Quality in exposing and processing x-rays (with respect to the safety of the patient and operator) is stressed. 3 Cr. (2-3). *Prerequisites: DEN 101, DEN 102.*

DEN 124
DENTAL ASSISTING SPECIALTIES
Overview of the role of dental assistants in the following dental specialties: endodontics, periodontics, orthodontics, and oral surgery. Procedures and instruments for each specialty will be explored. 4 Cr. (2-6).

DEN 125
PATHOLOGY AND PHARMACOLOGY FOR DENTAL ASSISTANTS
A review of the Fundamentals of Pharmacology and Pathology as it relates to the dental practice. Patient health histories, medical conditions, emergencies and high risk populations will be emphasized. 2 Cr. (2-0).

DEN 129
DENTAL ASSISTING PRACTICUM
Actual clinical experience in private dental offices, specialty offices, hospitals and dental clinics. 2 Cr. (0-6).

DEN 200
CLINICAL DENTAL HYGIENE II
Additional experience in the techniques of performing complete patient services. Emphasizes advance procedures. Special topics — including root planing and curettage, oral photography, pulp testing, ultrasonic scaler, etc. — are introduced and combined with clinical experience. 5 Cr. (1-12). *Prerequisites: DEN 120, DEN 121, DEN 122, DEN 123.*

DEN 201
PERIODONTICS II
A study of clinical diagonosis and treatment of periodontal disease. Stresses the importance of periodontal therapy and the role of the dental hygienist. 1 Cr. (1-0). *Prerequisites: DEN 120, DEN 121, DEN 122, DEN 123.*

DEN 202
GENERAL AND ORAL PATHOLOGY
General and oral disease. Emphasizes diseases and anomalies related to the oral cavity. 2 Cr. (2-0). *Prerequisites: DEN 120, DEN 121, DEN 122, DEN 123, BIO 125, BIO 201.*

DEN 203
DENTAL SPECIALTIES
Discussion of pedodontics, endodontics, oral surgery, operative dentistry, combined with practice in expanded functions. 3 Cr. (2-3). *Prerequisites: DEN 120, DEN 121, DEN 122, DEN 123.*

DEN 204
PHARMACOLOGY
The study of drugs to familiarize the students with their properties, preparation, effects upon the body, the modes of administration. Special consideration is given to those drugs which are of dental value including antibiotics, pain relieving drugs, antiseptics and anesthetics. Emphasis is placed on first aid and emergency treatment. 2 Cr. (2-0). *Prerequisites: CHM 100, DEN 120, DEN 121, DEN 122, DEN 123.*

DEN 220
COMMUNITY DENTAL HEALTH
Philosophy of community dental health. Techniques of teaching preventive dental health to groups. Fluoridation, special dental health programs, use of statistical materials. Rotating assignments give students opportunities to participate and observe in a variety of dental settings. 2 Cr. (2-0). *Prerequisites: DEN 200, DEN 201, DEN 202, DEN 203, DEN 204.*

DEN 221
CLINICAL DENTAL HYGIENE III
Additional experience in dental hygiene techniques. 4 Cr. (0-12). *Prerequisites: DEN 200, DEN 201, DEN 202, DEN 203, DEN 204.*

DEN 222
DENTAL PRACTICE ORIENTATION
Ethics and jurisprudence, office procedures and management. Review for licensing examinations. 2 Cr. (2-0). *Prerequisites: DEN 200, DEN 201, DEN 202, DEN 203, DEN 204.*

DEVELOPMENTAL STUDIES (CHD, ENL, MTH, RDG)

The College awards institutional credit for courses numbered 001-099. This credit will appear on the student's transcript and be included in calculating the cumulative grade point average. However, credits earned in courses numbered 001-099 may not replace any course or be used as electives required in a given program.

CHD 100
VALUE CLARIFICATION AND DECISION MAKING (8 weeks)
This course is designed to improve the student's self understanding as well as to provide a "skills" orientation toward coping with life problems. The course is based on the concept that many of the skills, techniques, and strategies that individuals use in various life situations can be adapted and are almost universally applied in other kinds of life difficulties. The course attempts to show students that a "life plan" is complete only when one considers all aspects of the human condition as important. 1 Elective Cr. (1.5-1.5).

CHD 101
CAREER EXPLORATION (8 weeks)
Specific steps in the career decision making process are taught. Students explore the world of work as it relates to their values, interests and abilities. The course offers students a step by step process for use in making career decisions. 1 Elective Cr. (1.5-1.5).

ENL 011
BASIC ENGLISH
This course emphasizes writing skills: organization, structure, content, style, and mechanics. Individualized instruction, instructor control of the writing process, limited class size, and personalization of grammar instruction are characteristic of the course. 3 Institutional Cr. (3-0). This course may not replace any English requirement or elective in a program.

MTH 001
ARITHMETIC
Presents the basic concepts and skills of arithmetic to prepare students for required mathematics courses. Pre and post-tests are used to insure mastery of units covered. 3 Institutional Cr. (3-0).

MTH 002
BASIC ALGEBRA
Basic skills and concepts of arithmetic and algebra are presented based on the student's aptitudes and needs. Pre and post-tests are used to insure mastery of units covered. More than one semester may be required for mastery of the objectives. 3 Institutional Cr. (3-0).

RDG 010
READING IMPROVEMENT
Basic reading improvement for students with limited success in previous reading performance. Differences in ability and background will determine areas each student will pursue. Emphasis on comprehension, vocabulary, speed, spelling. Students learn to take notes on textbook assignments. Audio tapes, reading machines, individualized materials, and handout sheets are available to encourage individual learning. 3 Institutional Cr. (3-0).

RDG 099
INDEPENDENT STUDY
A course of study designed to meet the needs of students who need individualized help with reading skills or study skills. No Credit. (1-3).

RDG 111
COLLEGE READING, REASONING AND STUDY SKILLS
This course is designed to enable students to acquire or review basic reading and study skills essential for success in college courses. Specific reading skills develop comprehension, vocabulary, and speed. Effective study habits and skills include: outlining, summarizing, underlining, note-taking, and test-taking techniques. The course will further develop the student's ability to process information in a logical way and foster the conscious development of cognitive learning skills. 3 Cr. (3-0).

DIESEL MECHANICS (DMC)

Light Duty Diesel Service courses are listed on page 114.

DMC 513
INTRODUCTION TO DIESEL MECHANICS (8 weeks)
Precision mechanical measurement. Basic fastening devices. Gasoline diesel engine operation and service. 7 Cr. (9-15).

DMC 514
INTERNAL COMBUSTION ENGINES (8 weeks)
Introduction to diesel engines. Electrical systems, emphasizing cranking, lighting, ignition, charging circuits, hand tools, power tools, and bench work. 7 Cr. (9-15).

DMC 523
FOUR-CYCLE DIESEL ENGINE (8 weeks)
Four-cycle diesel engine repair and overhaul. Emphasizes diesel truck engines. 7 Cr. (9-15). *Prerequisites: DMC 513, DMC 514.*

DMC 524
TWO-CYCLE DIESEL ENGINES (8 weeks)
Two-cycle diesel engine repair and overhaul. Diesel power applications, including trucks. Air induction system overhaul and troubleshooting. Basic air-conditioning/refrigeration principles. 7 Cr. (9-15). *Prerequisites: DMC 513, DMC 514, DMC 523.*

DMC 533
FUEL INJECTION SYSTEMS I (8 weeks)
Introduction to diesel fuel injection systems. Principles of governing and mechanical governing. Principles of jerk type fuel systems. 7 Cr. (9-15). *Prerequisites: DMC 513, DMC 514, DMC 524, or SOE 725 or AMT 511.*

DMC 534
FUEL INJECTION SYSTEMS II (8 weeks)
Hydraulic governors. Principles of distributor type fuel systems. 7 Cr. (9-15). *Prerequisites: DMC 513, DMC 514, DMC 523, DMC 524, DMC 533.*

DMC 543
TRUCK TRACTOR POWER TRAIN (8 weeks)
Truck power train. Clutch, transmission, driveline, and differential. 7 Cr. (9-15). *Prerequisites: DMC 513, DMC 514, DMC 523, DMC 524*

DMC 544
TRUCK TRACTOR CHASSIS (8 weeks)
Truck chassis, brakes, and suspension. State inspection procedures. 7 Cr. (9-15). *Prerequisites: DMC 513, DMC 514, DMC 523, DMC 524, DMC 543.*

DRAFTING—ENGINEERING (EDT)

EDT 101
MECHANICAL DRAWING
Offered to students enrolled in non-drafting programs. Use of drawing instruments, lettering, geometric construction, orthographic projection, isometric and oblique, dimensioning, sections, auxiliary views, threads and fasteners, working drawings. 2 Cr. (1-3).

EDT 102
ENGINEERING DRAFTING
Practical applications of drafting in electrical construction for both domestic and commercial use. House diagrams with circuit schematics, wiring diagrams and developing bills of materials. Layout diagrams for public facilities — for example, the lighting system for a small community. 2 Cr. (1-3).

EDT 103
GEARS AND CAMS
A study of motion transfer through the use of gears and cams. 2 Cr. (1-3).

EDT 104
AIRCRAFT DRAWINGS
Aircraft blueprint reading for aviation maintenance technicians. Emphasizes reading and interpreting multiview drawings. Includes installation diagrams, schematics, the use of charts and graphs. Making three dimensional sketches for repair and alterations to aircraft. 2 Cr. (1-3).

EDT 107
BLUEPRINT READING
Blueprint reading for welders. Emphasizes the reading, drawing and interpretation of multiview drawings involving dimensions, notes, specifications and welding symbols. 2 Cr. (1-3).

EDT 108
MANUFACTURING PROCESSES
Covers the theory, demonstration, and hands-on applications of drilling, reaming, counterboring, countersinking, tapping, turning, milling, and grinding. Theory and demonstrations of numerical control equipment. 3 Cr. (2-3).

EDT 111
BASIC DRAFTING I (8 weeks)
Use of drawing instruments, lettering, geometric construction, orthographic projection, sectioning, dimensioning, auxiliary views, revolutions and freehand sketching. 4 Cr. (4-12).

EDT 112
BASIC DRAFTING II (8 weeks)
Screwthreads and fastening devices, axonometric projection; isometric drawings. Sheet metal intersections and developments. 4 Cr. (4-12). *Prerequisite: EDT 111.*

EDT 121
POWER TRANSMISSION (8 weeks)
Power and motion transfer through the use of gears and cams and other devices. 4 Cr. (4-12). *Prerequisite: EDT 112.*

EDT 122
MECHANISMS
Power and motion transfer through the use of various linkages and mechanisms. 4 Cr. (4-12). *Prerequisite: EDT 121.*

EDT 201
DESCRIPTIVE GEOMETRY
Principles of orthographic projection. Fundamental problems involving the relationship of points, lines and planes in space; intersecting lines and planes; graphic computations for bearings and slopes of lines, strike and dip of planes. Solving problems related to the intersection of planes and solids. 3 Cr. (1-6). *Prerequisite: High school background in drafting.*

EDT 231
DETAIL AND ASSEMBLY DRAWINGS (8 weeks)
Accurate working drawings, sub-assemblies and assemblies. Drawing details from sketches and other engineering specifications; applied strength of materials; bearings; lubrications; elementary design and simplified drafting. 4 Cr. (4-12). *Prerequisite: EDT 112.*

EDT 232
APPLIED DRAFTING TECHNIQUES (8 weeks)
Making complex detail drawings based on industrial castings. Comprehensive study of close tolerance dimensioning. Introduction to fluid mechanics; metric conversion. 4 Cr. (4-12). *Prerequisite: EDT 231.*

EDT 241
ADVANCED DETAIL I (8 weeks)
Redesign of industrial castings into weldments. Electrical schematics. Comprehensive study of welding, piping and layouts. Material strength in relation to weldments and piping design. 4 Cr. (4-12). *Prerequisite: EDT 232.*

EDT 242
ADVANCED DETAIL II (8 weeks)
Advanced study in and applications of drafting. The use of industrial layout to make detail, assembly and sub-assembly drawings. Includes geometric tolerancing, true position dimensioning and surface specifications which conform to industrial standards; structural drafting and reprodrafting. 4 Cr. (4-12). *Prerequisite: EDT 232.*

ECONOMICS (ECO)

ECO 201
PRINCIPLES OF ECONOMICS
Introduces basic economic terms and concepts. Analyzes United States economic system and compares it to those of other countries. Students apply theory in developing basic economic computations and graphs. Macroeconomics is emphasized; some microeconomic concepts (consumer demand, utility, elasticity of supply/demand) are studied. 3 Cr. (3-0).

ECO 202
ECONOMIC ANALYSIS
A study of the theory of the firm. Analysis of economic problems involved in public policy decisions. Recommended for students intending to major in economics. 3 Cr. (3-0). *Prerequisite: ECO 201.*

ECO 290
SPECIAL STUDIES IN ECONOMICS
A flexible course designed to meet special needs of economics students. 1-3 Cr. (1 to 3-0). *Prerequisite: Permission of the instructor.*

EDUCATION (EDU)

EDU 111
INTRODUCTION TO EDUCATION
Study of the foundations of education — historical, economic, philosophical, and social -- and their implications for education today. 3 Cr. (3-0).

EDU 121
CHILDREN'S AND YOUNG ADULT LITERATURE
Comprehensive survey of children's and young adult literature. Basic knowledge and understanding of authors, illustrators, and literary forms as background for work in a public area of a library. 3 Cr. (3-0).

ELECTRIC (ELT)

ELT 110
ELECTRICITY FOR THE TRADES
Theory and laboratory assignments in electrical design. Symbols used on building construction blueprints. Explanation of electrical diagrams. The use of the National Electrical Code as a governing agent which establishes wiring requirements. Residential wiring, switching, lighting, receptacles, and service entrances in the laboratory. 3 Cr. (2-3).

ELT 111
DIRECT CURRENT FUNDAMENTALS
Basic principles of electricity and the laws and formulas which are used to solve electrical problems. Principles of magnetism and their relationship to direct current generators and motors and other electrical machinery. Laboratory work trains students to connect equipment and instruments. 5 Cr. (4-3). *Corequisite: MTH 103.*

ELT 113
ACCIDENT PREVENTION
Principles of accident prevention in industry. Electrical safety procedures in all human activities; lifesaving techniques. 2 Cr. (2-0).

ELT 116
CONSTRUCTION LAB I—RESIDENTIAL
An introduction to residential wiring, plans, specifications and codes. Theory and lab assignments in developing wiring diagrams, wiring basic lighting and receptacle currents, low voltage switching and control circuits. Blueprint reading and the NEC are included in the course. 5 Cr. (3-6).

ELT 117
APPLIED DIRECT CURRENT FUNDAMENTALS
Basic electrical laws, electrical terms, batteries, electrostatics, electrical meters and instruments. 6 Cr. (4-6). *Corequisite: MTH 710.*

ELT 120
CONSTRUCTION LAB II—COMMERCIAL
Theory and laboratory assignments in commercial wiring, blueprint reading, and N.E.C. as it applies to commercial circuits. Students will plan, layout, and install circuits and devices used in commercial buildings. 5 Cr. (3-6). *Prerequisite: ELT 116.*

ELT 122
ALTERNATING CURRENT FUNDAMENTALS
The fundamental principles of the behavior and flow of alternating current electricity. Includes problem solving, current, voltage, impedance, reactance and power factor in series and parallel circuits. Operating principles of AC motors, generators and control equipment. 5 Cr. (4-3). *Prerequisite: ELT 111; Corequisite: MTH 104.*

ELT 126
APPLIED ALTERNATING CURRENT FUNDAMENTALS
Alternating current electricity as it relates to residential, commercial, and industrial power use. Laws and formulas used to solve problems in the use of AC electrical principles. Practical experiences in the use of equipment and instruments. 6 Cr. (4-6). *Prerequisite: ELT 117; Corequisite: MTH 500.*

ELT 127
MOTOR MAINTENANCE AND REPAIR
Electrical and mechanical features of various single phase motors; lab work; development of knowledge and skills in rewinding and repairing single phase motors. 3 Cr. (1-6). *Prerequisite: ELT 117 or equivalent.*

ELT 230
CONSTRUCTION LAB III—INDUSTRIAL
An introduction to industrial wiring, blueprint reading, and the N.E.C. Theory and lab assignments in bus systems, unit sub stations, panelboards, subfeeders, conduit, and special equipment. 3 Cr. (1-6).

ELT 231
INDUSTRIAL MOTOR CONTROL
This course represents a practical and theoretical approach to the understanding, designing, development and use of relay logic diagrams in the installation, operation, and maintenance of industrial logic control systems. 6 Cr. (4-6).

ELT 232
BASIC ELECTRONICS FOR INDUSTRY
Basic electronic concepts as used in industrial control. Primarily a devices course, introducing the student to discrete devices, integrated circuits (both linear and digital), symbols, basic circuit configurations, the use of test equipment and measuring techniques, the study of these devices in the laboratory to supplement lecture. 6 Cr. (4-6). *Prerequisite: ELT 126.*

ELT 234
ELECTRICAL MOTOR CONTROL
An introduction to the understanding, designing and development of relay logic diagrams for use in the installation, operation, and maintenance of relay motor control systems for industry. 4 Cr. (3-3).

ELT 235
INDUSTRIAL ELECTRONICS
Fundamentals of electronic devices, microprocessors, and troubleshooting solid state I/O control circuits. Practical laboratory work using self-contained, electromechanical robots controlled by their own on-board programmable computers. 6 Cr. (4-6). *Prerequisite: ELT 122.*

ELT 240
CONSTRUCTION LAB IV—PRACTICAL EXPERIENCE
Practice in the installation of rigid conduit and other electrical wireways. Pulling in and wiring motor controllers and other electrical equipment. Study of blueprints for large electrical construction jobs. 3 Cr. (0-9). *Prerequisite: ELT 230.*

ELT 243
PROGRAMMABLE CONTROL
A practical and theoretical approach to the installation, programming, and maintenance of programmable control (P.C.) equipment. The application of P.C. in manufacturing processes. Theory covers the proper installation of P.C. equipment, especially the correct grounding application of processor units and the development of P.C. ladder diagrams. The practical work includes programming and changing operational programs to prepare the student to work as a "line mechanic" on production lines using programmable controls. 4 Cr. (3-3). *Prerequisite: ELT 126, ELT 231 or related industrial experience.*

ELT 244
ADVANCED ELECTRICAL THEORY
Solution of network problems. Problems involving Kirchoff's Laws; Mesh and Nodal Analysis; Thevenin's and Norton's Theorems; Voltage and Current Division. Problem sets using second and third order determinants using phasors. 3 Cr. (3-0). *Prerequisite: ELT 122.*

ELT 245
INTRODUCTION TO PROGRAMMABLE LOGIC CONTROL
An introductory course in the understanding, programming and operation of programmable logic control and the utilization of such controls as an aid to effective production and quality control processes for production line industrial control systems. The practical application includes the programming and changes of operational programs and generated control commands which will provide a complete system for efficient high speed production requirements. 4 Cr. (3-3). *Prerequisites: ELT 234 or related industrial experience.*

ELT 246
ELECTRICAL MACHINERY ANALYSIS
Theory and laboratory instruction in the use and operation of electrical machinery and transformers, meters and metering methods used with this equipment, and troubleshooting procedures using schematic diagrams. 3 Cr. (2-6). *Prerequisite: ELT 126.*

ELT 247
INDUSTRIAL CONTROL AND TROUBLESHOOTING
Fundamentals of microprocessors and solid state I/O control circuits. Practical laboratory work in troubleshooting using self-contained, electromechanical robots controlled by their own on-board programmable computers. 4 Cr. (3-3). *Prerequisites: ELT 231 and ELT 232. Corequisite: ELT 243.*

ELT 248
ELECTRICAL SYSTEMS ANALYSIS
Theory and laboratory instruction in the use and operation of electrical machinery and transformers, meters and metering methods used with this equipment, and troubleshooting procedures using schematic diagrams. 3 Cr. (2-3). *Prerequisite: ELT 122.*

ELT 531
AIR CONDITIONING/REFRIGERATION ELECTRICITY
Basic AC and DC circuitry, laws of electricity, uses of meters, and safety procedures in air conditioning and refrigeration. Practical techniques in wiring and sections of the National Electrical Code. 6 Cr. (4-6).

ELT 541
ELECTRIC MOTORS AND REFRIGERATION CONTROLS
Theory of operation, applications, installation, and troubleshooting of the electrical control circuits and control devices used in air conditioning and refrigeration. The operation and application of basic types of motors used in the industry. 5 Cr. (3-6).

ELT 551
COMMERCIAL HVAC CONTROL
Commercial HVAC controls and control systems, including electric, electronic, and pneumatic systems. Solid state single zone and multizone logic modules. The control of variable volume systems. Microcomputer applications are included in the course material. Troubleshooting and the ability to read control diagrams are stressed throughout the course. 4 Cr. (3-3).

ELECTRONICS (ENT)

ENT 105
MICROCOMPUTER MAINTENANCE
This course is designed for the person responsible for the operation of a microcomputer and who must perform upgrades to the equipment, troubleshoot error conditions and perform routine maintenance. Topics will include recognition of internal components, proper removal and insertion of expansion boards, proper cleaning and maintenance, and correction of errors through extended diagnostics. 1 Cr. (.75-.75).

ENT 116
INTRODUCTION TO SOLID STATE DEVICES
Introduction to discrete solid state devices: diodes, transistors and four-layer devices. These devices will be discussed for a basic understanding of how they function in common circuits. 3 Cr. (3-0). *Prerequisite or corequisite: ENT 131.*

ENT 121
INTERMEDIATE SOLID STATE DEVICES & CIRCUITS
Analysis and basic design of two and three terminal discrete devices including multi-stage circuits and feedback methods. 3 Cr. (3-0). *Prerequisite: ENT 116.*

ENT 127
INTRODUCTION TO DIGITAL ELECTRONICS
Digital number system and codes. Introduction to combinational and sequential logic circuits. Examination of logic families and their applications. 3 Cr. (3-0). *Prerequisite: ENT 116 or permission of instructor.*

ENT 131
DC — AC BASICS
This is an introductory course in DC and AC electric circuits. Introduction to current flow, resistance, and units of electrical measurement. Circuit analysis will be limited to a basic understanding of series, parallel and series-parallel networks with Ohm's Law. AC time varying waveforms, capacitors, inductors, and transformers will be studied. Emphasis in this course will be on fundamental understanding of electrical concepts. Course is also suitable for non-electronic majors. 3 Cr. (3-0).

ENT 132
DC — AC MEASUREMENTS
Application of DC and AC theory concepts; wiring, soldering techniques, and basic circuit construction practices for electronic circuits; use of analog test equipment and measuring techniques; safety practices for electronics. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 131.*

ENT 135
DC-AC CIRCUIT ANALYSIS
Analysis of DC and AC circuits utilizing network theorems and other mathematical techniques. 3 Cr. (3-0). *Prerequisite: ENT 131. Recommended prerequisite or corequisite: MTH 103, MTH 104.*

ENT 136
ADVANCED DC-AC CIRCUIT MEASUREMENTS
Extensive measurements with industrial standard oscilloscopes and other analog and digital measuring equipment will be made and documented. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 135.*

ENT 154
SOLID STATE DEVICES APPLICATIONS
Prototype solid state circuits utilizing two and three terminal devices are constructed. Parameter measurements on these prototypes are made and documented. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 116, ENT 132.*

ENT 161
INTERMEDIATE DEVICES APPLICATIONS
Construction and measurement of a variety of solid state devices and circuits; extensive measurement techniques are employed to collect data. Emphasizes the presentation of collected data in technical report form using narrative and graphic techniques. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 121.*

ENT 164
DIGITAL CIRCUITS APPLICATIONS
Construction of prototype logic circuits. Measurement of both static and dynamic characteristics. Proto Board and wire wrapping prototyping methods are introduced. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 127.*

ENT 249
INTRODUCTION TO MICROPROCESSORS
An introduction to the Motorola 6800 family of microprocessors: the architecture, instruction set, and basic interface practices. 3 Cr. (3-0). *Prerequisite: ENT 127 or permission of instructor.*

ENT 252
LINEAR INTEGRATED CIRCUITS
Operational amplifiers, regulators, comparators, converters and specialized LIC's together with the associated circuitry to control and modify the characteristics of these devices. 3 Cr. (3-0). *Prerequisite: ENT 121.*

ENT 253
LINEAR CIRCUITS APPLICATIONS
Laboratory experience with a wide variety of linear integrated circuits. Measurement of these circuits and troubleshooting techniques are explored. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 252.*

ENT 254
MICROPROCESSOR APPLICATIONS I
Lab experiments complement the coursework of ENT 249. Each student uses a microprocessor trainer to perform programming and interface experiments. 1 Cr (0-3). *Prerequisite or corequisite: ENT 249.*

ENT 255
BIOMEDICAL INSTRUMENTATION AND MEASUREMENTS
Human electrical potentials and the transducers used for detecting these signals. Extensive coverage of equipment used to monitor the cardiovascular, respiratory and nervous systems. Human physiology is included as required. Stresses patient safety measures for each piece of equipment studied. 3 Cr. (3-0).

ENT 258
ADVANCED COMMUNICATION SYSTEMS
An examination of microwave components associated with satellite and point-to-point communication systems. Other advanced communication system techniques will be examined. 3 Cr. (3-0). *Prerequisites: ENT 280, ENT 281.*

ENT 259
ADVANCED COMMUNICATION LABORATORY
Microwave component experiments. Measurement of receiver front end temperatures, power measurements, VSWR measurements. Reception of geostationary satellites provides experience in problems associated with this type of communication. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 258.*

ENT 262
MICROPROCESSOR INTERFACING
Shielding, grounding and transmission line techniques, bus interconnections, memories, serial interfacing, parallel interfacing, magnetic-recording techniques, and CRT controller design are studied in relation to their use in microprocessor interfacing. 3 Cr. (3-0). *Prerequisite or corequisite: ENT 260.*

ENT 263
MICROPROCESSOR APPLICATIONS II
Lab experiments complement the coursework of ENT 262. Each student will use an ET 3400 trainer to perform a variety of interface experiments. Small computer systems will be used for advanced interface experiments. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 262.*

ENT 270
INTRODUCTION TO COMPUTER MAINTENANCE
The basic structure, history, applications, and operation of computer systems will be studied. Theory of the computer systems will be taught on a basic block diagram level. Maintenance of the computer systems will include a variety of basic tasks to service the equipment on a board or subassembly replacement level. 3 Cr. (3-0).

ENT 271
COMPUTER MAINTENANCE APPLICATIONS I
This laboratory course accompanies ENT 290 with practical hands-on computer operation and maintenance experience. Preventative maintenance, proper use of diagnostic troubleshooting guides, replacement of circuit boards, and various sub-assemblies will be emphasized. 1 Cr. (0-1). *Prerequisite or corequisite: ENT 270.*

ENT 272
MACHINE TOOL APPLICATIONS FOR ELECTRONICS
A survey course covering the operation and applications of a variety of machine shop tools and automated manufacturing equipment. The lab portion of this course will include the use of machine shop hand tools often required by electronic technicians. 2 Cr. (1-3).

ENT 275
MICROPROCESSOR INTERFACING II
A continuation of ENT 262. Advanced microprocessor interfacing concepts will be examined. System signals, protocols, and measurement strategies will be emphasized. 3 Cr. (3-0). *Prerequisite: ENT 262.*

ENT 276
ADVANCED COMPUTER MAINTENANCE
Detailed theory of operation of computers and associated peripherals, including schematic reading and component identification. Advanced troubleshooting strategies down to component level where practical will be explored. Mechanical troubleshooting, repair, and adjustment techniques will be examined for various peripherals such as disk drives and line printers. 3 Cr. (3-0). *Prerequisite: ENT 270.*

ENT 277
AUTOMATED SYSTEMS MAINTENANCE
The basic theory behind automated manufacturing equipment will be presented, including the maintenance and interfacing of industrial control units, such as computer numerically controlled (CNC) machines, and industrial robots. Basic theory and control of motors, relays, hydraulics, and mechanical assemblies will be included. 3 Cr. (3-0).

ENT 278
AUTOMATED SYSTEMS MAINTENANCE APPLICATIONS
This lab accompanies ENT 303 to provide students the opportunity to work with state-of-the-art automated manufacturing equipment such as computer numerically controlled machines and industrial robots. Hands-on maintenance and interfacing techniques will be an integral part of this course. 1 Cr. (0-3).

ENT 279
FIBER OPTIC DEVICES & SYSTEMS
Examination and analysis of fiber optic cable as a transmission medium for telecommunication signals. Special requirements of this transmission mode with regard to passive and active electronic component usage. 3 Cr. (3-0). *Recommended prerequisites: ENT 280, ENT 281, ENT 285.*

ENT 280
INTRODUCTION TO COMMUNICATION DEVICES
Analysis of filter networks, impedance matching networks, resonant circuits, oscillator and frequency synthesis. Transmission line and antenna theory is stressed. Noise as it affects circuit operation and a primer on vacuum tube theory as it applies to high power transmitter operation is studied. 3 Cr. (3-0). *Prerequisite: ENT 135.*

ENT 281
INTRODUCTION TO COMMUNICATION SYSTEMS
Modulation techniques, mixing, multiplexing, receiver circuits, transmitter circuits, and television theory are studied. 3 Cr. (3-0). *Prerequisite or corequisite: ENT 280.*

ENT 282
COMMUNICATION CIRCUITS APPLICATIONS I
Prototyping and measurement of communication circuits including oscillators and RF amplifiers. Problems associated with RF prototyping are explored. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 280.*

ENT 283
COMMUNICATION APPLICATIONS II
Alignment, measurement, and calibration of communication systems. Measurement and analysis of modulated circuits are explored. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 281 and ENT 282.*

ENT 285
LASER OPTIC DEVICES & SYSTEMS I
Introduction to the basic operation of various laser systems. Safety requirements for safe operation of lasers at all power levels used in industrial applications. The interaction of optical components for laser applications will be studied. 3 Cr. (3-0).

ENT 286
LASER OPTIC DEVICES & SYSTEMS APPLICATIONS
A companion laboratory course for ENT 285. Safety practices associated with lasers. Techniques of light and optical measurements will be stressed in association with low power laser devices. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 285.*

ENT 287
INSTRUMENTATION AUTOMATION INTERFACING
Sensor-to-instrument or automated control system interfacing circuits and devices will be examined. Basic measuring instruments will also be covered. 3 Cr. (3-0). *Prerequisite: ENT 121, ENT 127, ENT 135.*

ENT 288
INSTRUMENTATION APPLICATIONS I
Signal conditioning circuits will be built and tested. Troubleshooting techniques for these circuits will demonstrated. Advanced measuring techniques with industrial grade test equipment will be explored. 1 Cr. (0-1). *Prerequisite or corequisite: ENT 287.*

ENT 290
LASER OPTIC DEVICES AND SYSTEMS II
This is a continuation of ENT 285. An advanced examination of both laser and optic systems associated with advanced technology applications. 3 Cr. (3-0). *Prerequisite: ENT 285.*

ENT 291
MICROPROCESSOR INTERFACING APPLICATION
Experience with interfacing applications. Measurement and troubleshooting techniques associated with various interface equipment. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 275.*

ENT 292
LASER APPLICATIONS
Advanced applications and measurements of laser devices used in advanced technology applications. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 290.*

ENT 293
FIBER OPTIC APPLICATIONS
Application of passive components and skills to install these components in fiber optic systems. Use of specialized test instruments for measurement of fiber optic systems. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 279.*

ENT 294
INSTRUMENTATION—TRANSDUCERS
A study of a representative variety of transducers used in automated manufacturing processes. Transducer physical principles, limitations, specifications, and signal conditioning for measurement and control are examined. 3 Cr. (3-0).

ENT 295
INSTRUMENTATION—TRANSDUCER APPLICATIONS
A number of transducers will be used to demonstrate the measurement of paramenters such as temperature, force, position, and velocity to activate electronic control devices. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 294.*

ENT 296
BIOMEDICAL ELECTRONIC EQUIPMENT MAINTENANCE APPLICATIONS
Experience with safety checks and disassembly and assembly of biomedical equipment. Safe troubleshooting practices will be followed. 1 Cr. (0-3). *Prerequisite or corequisite: ENT 255.*

ENT 297
COMPUTER MAINTENANCE APPLICATIONS II
This laboratory accompanies Advanced Computer Maintenance (ENT 276) with hands-on experience. Using advanced test equipment, students will learn how to properly troubleshoot computer problems to board level and where practical to component level. Detailed mechanical repairs and adjustments of computer peripherals will also be covered. 1 Cr. (0-3).

ENGINEER IN TRAINING (EIT)

EIT 201
STATICS
The basic principles of statics: various force systems, static equilibrium of the force systems, friction and miscellaneous static related problems The practical application of these principles—analysis of roof and bridge trusses, beam under various loading conditions; belt friction and rolling resistance, flexible cables, etc. 3 Cr. (3-0).

EIT 202
STRENGTH OF MATERIALS I
Outlines properities of enginering materials, behavior of materials under loads, stress and deformations, riveted and welded joints, torsion, centroids, moment of inertia, areas of shear and moments in beams, stresses in beams and design of beams. Students learn to analyze and design simple beams, riveted and welded connections, shafts subjected to torsion, etc. 3 Cr. (3-0).

EIT 203
DYNAMICS
Basic principles of dynamics, i.e., kinematics of rectilinear motion, curvilinear motion, kinetics of motion, plane motion, and their effects of moving or static bodies. The application of these principles — the use of work, energy, power and impulse, momentum and impact concepts to solve various motion problems. 3 Cr. (3-0).

EIT 204
FLUID MECHANICS
Basic principles of fluid mechanics and their applications in practical fluid mechanics problems. Properties of fluids, fluid pressure at rest, buoyancy effect, steady flow of liquids in closed conduits, as well as in open channels, losses in both cases, flow measuring devices, variable flow, forces produced by fluids in motion and dimensional analysis and similitudes. All equations of the fluid flow are derived for the basic Bernoulli equation. 3 Cr. (3-0).

EIT 205
STRENGTH OF MATERIALS II
Continuation of Strength of Materials I. Covers complex problems such as deflection of beams by moment-area method, analysis of statically indeterminate beams by three moment equation and moment distribution methods, combined bending and axial stresses, analysis and design of timber, steel and aluminum columns and special topics of strain energy and impact loadings 3 Cr. (3-0).

EIT 206
ENGINEERING ECONOMICS
Study of economics in relation to engineering. 3 Cr. (3-0).

EIT 207
ENGINEERING CHEMISTRY
An intensive course of chemical calculations based on chemical reactions and physical properties of substances. Includes theoretical topics needed for calculations 3 Cr. (3-0).

EIT 208
THERMODYNAMICS
Energy transfer in relation to changes in physical properties of substances. 3 Cr. (3-0).

EIT 209
ENGINEERING PHYSICS
A study of physics as it relates to engineering. 3 Cr. (3-0).

EIT 210
ENGINEERING ELECTRONICS
Fundamental principles of electrical circuit analysis are applied to EIT problems. Includes Ohm's law, series circuits, parallel circuits, series-parallel circuits, network theorems, magnetism, electro-magnetic induction, alternating current and voltage inductance, inductive reactance, capacitance, capactive reactance, capacitive circuits, alternating current circuits, complex numbers and resonance. 3 Cr. (3-0). *Prerequisites: algebra, trigonometry and basic calculus.*

ENGLISH (ENL)

ENL 011
BASIC ENGLISH
This course emphasizes writing skills: organization, structure, content, style, and mechanics. Individualized instruction, instructor control of the writing process, limited class size, and personalization of grammar instruction are characteristic of the course. 3 Institutional Cr. (3-0). This course may not replace any English requirement or elective in a program.

ENL 111
ENGLISH COMPOSITION I
Basic composition — language structure, rhetorical principles, orderly, clear writing, and readings in expository prose. Offers the student a variety of methods for use in developing his/her own written expression. Analysis, discussion, and practice of such methods as description, definition, narration, comparison, classification and argumentation. The student uses writing to explain and explore, gaining experience in essential writing and research skills. 3 Cr. (3-0).

ENL 121
ENGLISH COMPOSITION II
Continues the writing principles developed in ENL 111. Includes the study of poetry, prose and drama. Emphasizes critical analysis and interpretation of literature through discussion and written assignments. Through writing about literature and its themes, students examine the purpose, argument and style of literary writing. Students explore the importance of literature to society; study the impact of language upon the reader and apply the skills learned in ENL 111. 3 Cr. (3-0). *Prerequisite: ENL 111.*

ENL 201
TECHNICAL WRITING
Intensive survey of technical writing with practice in preparing reports, instructions, memos and other communication for business and industry. Students develop skills in analyzing audiences and writing for readers both with and without technical expertise. 3 Cr. (3-0). *Prerequisite: ENL 111 or permission of instructor.*

ENL 202
FUNDAMENTALS OF SPEECH
Includes public speaking, its methods and evaluation, and the development of persuasive speech. The study of modern rhetorical theory in interpersonal and group dynamics; mass persuasion and non-verbal behavior. The student will participate as speaker in a variety of situations and roles, including conflict, mediation, support, and common ground. 3 Cr. (3-0).

ENL 231
WORLD LITERATURE
Students read literature which expresses the western belief in the paramount importance of the individual. Surveys representative works of continental Europe from classical Greek/Roman periods to the present. 3 Cr. (3-0). *Prerequisite: ENL 121 or permission of instructor.*

ENL 235
CREATIVE WRITING
Development of skills in writing imaginative prose. Students present short stories for class criticism and review. 3 Cr. (3-0). *Prerequisite: ENL 111.*

ENL 250
LITERATURE OF THE AMERICAN INDIAN
A reading of the oral and written literature of Native Americans, with emphasis on literature produced in North America. The works will be approached through literary criticism, philosophy, religion, psychology, history, and social criticism. 3 Cr. (3-0).

ENL 251
MASTERS OF HORROR: HORROR IN LITERATURE AND THE MASS MEDIA
A humanities elective exploring the serious treatment of "horror" by authors from the 17th century to modern times, including Shakespeare, Shelley, Poe, Lovecraft and Bradbury. Also examines the evolution of the pulps, the horror comic, the horror radio series and the horror film as forces that shape and mirror the mainstream of American social thought. 3 Cr. (3-0).

ENL 252
WOMEN IN LITERATURE
A humanities elective exploring twentieth-century American literature written about women by women, including Gilman, Chopin, Plath, Porter, Oakes, Walker, Welty. The course uses literature to examine the archetypes and stereotypes, from classical times to the present, that have shaped the ways women see themselves and the ways others view them. Also examines the treatment of women in cartoons, advertising, music and film to demonstrate how these genres maintain and/or alter the image of modern women. 3 Cr. (3-0).

ENL 290
SPECIAL STUDIES IN ENGLISH
Individual guidance in advanced studies. Admission by permission of the instructor. 1-3 Cr. (1 to 3-0).

ENL 711
COMMUNICATIONS
Skills and competencies in basic technical writing and oral communication to meet the needs of the applied arts certificate student. 3 Cr. (3-0). (With permission of instructor and upon demonstration of the appropriate writing skills, ENL 201 may be substituted for ENL 711. Course substitution form must be filed if ENL 711 is required in the student's curriculum. See Integrated Studies Division Director.)

ENVIRONMENTAL SCIENCE (ESC)

ESC 100
ENVIRONMENTAL SCIENCE
Designed especially for the non-science student who wants to understand environmental systems and problems from a scientific viewpoint. Covers many aspects of energy, land, water, and air pollution and their effect on living organisms, especially people. 3 Cr. (3-0).

FITNESS & LIFETIME SPORTS (PED)

Fitness and Lifetime Sports requirements may be waived with permission of the Dean and the Director of Health Sciences if the student has been in the Armed Services for at least one year of active duty or if it is determined that he/she should be excused because of age or physical condition.

PED 106
TENNIS/BOWLING
Tennis instruction for beginners and for those who wish to improve their skills in this lifetime sport. Instruction and practice in bowling fundamentals. Includes bowling skills, strategy, scoring and game courtesies. 1 Cr. (0-2).

PED 107
GOLF/BOWLING
Instruction and practice in golf skills to prepare students to play and enjoy a round of golf. Instruction and practice in bowling fundamentals. Includes bowling skills, strategy, scoring and game courtesies. 1 Cr. (0-2).

PED 121
SOCCER/VOLLEYBALL/BASKETBALL
Instruction in soccer and basketball stressing basic skills, strategy, player positioning and game rules. Volleyball (a large muscle activity) instruction for beginners and those who wish to improve their playing skills. 1 Cr. (0-2).

PED 122
SOFTBALL/VOLLEYBALL/BASKETBALL
Instruction and practice in the fundamental skills of softball. Volleyball instruction for beginners and those who wish to improve their playing skills. Instruction in basketball stressing basic skills, strategy, player positioning and game rules. 1 Cr. (0-2).

PED 123
FOOTBALL/VOLLEYBALL/BASKETBALL
Instruction in touch football and volleyball (large muscle activities) for those who wish to learn or improve skills. Instruction in basketball stressing basic skills, strategy, player positioning and game rules. 1 Cr. (0-2).

PED 124
BASKETBALL/VOLLEYBALL
Instruction in basketball stressing basic skills, strategy, player positioning and game rules. Volleyball (a large muscle activity) instruction for beginners and those who wish to improve their playing skills. 1 Cr. (0-2).

PED 125
WEIGHT TRAINING/VOLLEYBALL/SOFTBALL
A progressive developmental program using the Universal Gym in either a 70 percent muscle building category (male) or a 50 percent muscle toning category (female). May include a cardio-vascular efficiency program in jogging, rope jumping or running in place. Volleyball (large muscle activity) instruction for beginners and those who wish to improve their playing skills. Instruction and practice in the fundamental skills of softball. 1 Cr. (0-2).

PED 141
ARCHERY/VOLLEYBALL
Field archery is a fundamental course in target shooting emphasizing accuracy at close ranges. Volleyball (large muscle activity) instruction for beginners and those who wish to improve playing skills. 1 Cr. (0-2).

PED 142
BADMINTON/VOLLEYBALL
Instruction in the fundamental skills of badminton (a lifetime sport). Volleyball (large muscle activity) instruction for beginners and those who wish to improve their playing skills. 1 Cr. (0-2).

PED 143
WEIGHT TRAINING/VOLLEYBALL
A progressive developmental program using the Universal Gym in either a 70 percent muscle building category (male) or a 50 percent muscle toning category (female). May include a cardio-vascular efficiency program in jogging, rope jumping or running in place. Volleyball (large muscle activity) instruction for beginners and those who wish to improve their playing skills. 1 Cr. (0-2).

PED 144
WEIGHT TRAINING/GOLF
A progressive developmental program using the Universal Gym in either a 70 percent muscle building category (male) or a 50 percent muscle toning category (female). May include a cardio-vascular efficiency program in jogging, rope jumping or running in place. Instruction and practice in golf skills to prepare students to play and enjoy a round of golf. 1 Cr. (0-2).

PED 145
ADAPTED P.E./WEIGHT TRAINING
An individualized course designed to meet the specific needs of the student with a physical handicap. Depending upon handicap, program may include a combination of appropriate individual sports and/or a self-development program such as Hatha Yoga or progressive general exercise. Weight training is a progressive developmental program using the Universal Gym in either a 70 percent muscle building category (male) or a 50 percent muscle toning program (female). May include a cardio-vascular efficiency program in jogging, rope jumping or running in place. 1 Cr. (0-2).

PED 146
BOWLING/PHYSICAL FITNESS
Instruction and practice in bowling fundamentals. Includes bowling skills, strategy, scoring and game courtesies. An individualized program to raise the student's level of physical fitness. The program may include exercise, jogging, bicycling, aerobic dance or weight training. 1 Cr. (0-2).

PED 147
JOGGING/PHYSICAL FITNESS
An individualized program of running designed to accommodate each student's needs and goals. An individualized program to raise the student's level of physical fitness. The program may include exercise, jogging, bicycling, aerobic dance or weight training. 1 Cr. (0-2).

PED 162
GOLF
Instruction and practice in golf skills to prepare students to play and enjoy a round of golf. 1 Cr. (0-2).

PED 163
GYMNASTICS
Instruction in movement skills, combinations and sequences in free exercise, tumbling and on gymnastic apparatus. 1 Cr. (0-2).

PED 166
RACQUETBALL
Instruction for beginners and for those who wish to improve skills in this lifetime activity. 1 Cr. (0-2).

PED 167
ROLLER SKATING
Instruction and practice in the fundamental skills needed to enjoy this sport. 1 Cr. (0-2).

PED 168
YOGA
Hatha Yoga is a self-discipline designed to increase the efficiency of all body systems. It stresses the reality of self-awareness and introduces relaxation as a way of life. The course stresses the practicing of asanas (postures) and the techniques for complete breathing and total body relaxation. 1 Cr. (0-2).

PED 169
AEROBIC DANCE
A vigorous physical fitness course combining locomotive movements for cardiovascular endurance, exercise for muscle tone and flexibility and basic dance steps for rhythmical development and coordination. The sequences are performed to a variety of musical scores. 1 Cr. (0-2).

PED 201
PERSONAL AND COMMUNITY HEALTH
Discussions of up-to-date relevant information concerning personal and community health problems of today's college students. 2 Cr. (2-0).

PED 202
RED CROSS STANDARD FIRST AID
This course will cover the material of the "Standard First Aid and Personal Safety Program" and the "Basic Life Support Course in Cardiopulmonary Resuscitation" as set up by the American National Red Cross. It is an intermediate-level first aid course. 2 Cr. (2-0).

FLORICULTURE (HRT)
(See Horticulture)

FOOD AND HOSPITALITY (FHD)

FHD 110
DINING ROOM MANAGEMENT
Service styles will be practiced, dining room staffing, wine service, dining room equipment, French menu terms, and merchandising the product through the dining room atmosphere will be covered. 3 Cr. (2-3).

FHD 111
INTRODUCTORY FOODS
Study and application of the basic scientific concepts related to food preparation. Emphasizes knowledge of basic ingredients and the production and evaluation of quality food projects. Includes orientation to the food service industry, study of advances in food technology and practice in using the grill, fryer and microwave. 3 Cr. (2-3).

FHD 112
NUTRITION
Sources and functions of nutrients and how they relate to body functions. Essentials of an optium diet. Includes nutritive requirements for each stage of the life cycle. 3 Cr. (3-0).

FHD 115
PURCHASING, STORAGE, AND SANITATION
Managerial training in all facets of purchasing. Correct procedures for good storage and sanitation. Training staff in correct procedures to assure production of safe food. 3 Cr. (3-0).

FHD 121
QUANTITY FOOD PREPARATION
Menu planning, purchasing, preparation, and service of food in quantity. Emphasizes safe and efficient use of quantity food preparation equipment, cooking with steam and deep fat, meats, and production management. 3 Cr. (2-3). *Prerequisites: FHD 111 or permission of instructor.*

FHD 122
DIET THERAPY WITH DIETETIC SEMINAR
In-depth study of principles of therapeutic diets. Includes medical terminology, tours of community health services, and familiarity with diet manuals. Students learn interviewing, counseling techniques and sources for professional updating. Seminar includes study of specific therapeutic cases. 3 Cr. (3-0). *Prerequisite: FHD 112.*

FHD 125
MENU PLANNING AND COST CONTROL
Techniques of planning nutritious meals for commercial establishments and institutions; the printed menu; controlling costs through good menu planning and other techniques. 3 Cr. (3-0).

FHD 126
FRONT OFFICE MANAGEMENT AND HOUSEKEEPING
Introduction to hotel and motel management. Managing a front office—includes promotion, guest registration, and cost control; management of the housekeeping department. Includes supervised work experience at area hotels and motels. 3 Cr. (2-3). Offered every other year in the spring term.

FHD 127
FUNDAMENTALS OF BAKING
This course is to teach the fundamental principles and procedures for preparing baked goods, pastries, and desserts, with attention to both theory and hands-on practice. 4 Cr. (2-6).

FHD 128
CAFETERIA PRODUCTION AND SERVICE
Application of quantity food production techniques to cafeteria operations. Includes soup and salad bar preparation, hot and cold sandwich preparation, and serving line techniques. 1 Cr. (0-3).

FHD 129
BEVERAGE MANAGEMENT
Introduction to beverages and beverage operations. Guides for planning, equipping, staffing, operating and marketing a profitable enterprise. Study of industry standards for variable beverages with instruction in consistency of product and service, including study of selection, care, and serving of beer and wines. Includes insights into seller responsibilities and perspective on government regulations. 3 Cr. (2-3).

FHD 201
ADVANCED QUANTITY FOODS
Cooking foods in quantity. Emphasizes advanced skills of food preparation, ordering and receiving, individual learning objectives. Will strengthen areas in which student needs help. 2 Cr. (0-6). *Prerequisite: FHD 121.*

FHD 232
INTRODUCTION TO GARDE MANGER
Techniques of cold food preparation and presentation. Includes work with appetizers, salads, cold plates and sandwiches. Emphasis on preparation of basic ingredients. Practice in garniture and plating for maximum effect. 3 Cr. (1-6).

FHD 234
HEALTH CARE DELIVERY SYSTEMS
In-depth study of the health care programs available to the public. Present problems and future directions of health care institutions and the medical profession. Includes factors that consumers of health care services should know about in order to avoid fads and quacks. 3 Cr. (3-0).

FHD 235
PERSONNEL MANAGEMENT, WORK SIMPLIFICATION
Management techniques, interpersonal relationships, motivations, manual motions, work place layout, production job analysis and evaluation. Establishing work loads. 3 Cr. (3-0).

FHD 237
ADVANCED QUANTITY AND ALA CARTE
Application of quantity production techniques to new trends—nouvelle, regional, and spa cuisine. Applies techniques of broiling, grilling, saute, and frying to restaurant production. 4 Cr. (1-9).

FHD 238
BREAKFAST AND BRUNCH PREPARATION
Preparation and presentation of items for use in breakfast and brunch. Emphasis on egg production, breakfast quick breads and meats which are applicable to high profit breakfast operations now extending from early morning through the entire day. 3 Cr. (1-6).

FHD 239
CAKE DECORATING I
This course demonstrates the basics of cake decorating. Hands-on practice by the student includes the identification and use of cake decorating equipment, making and tinting of four types of icings, icing of various types of cakes (layers and shaped), using writing, star, leaf, and drop flower tips. The student will also learn to make bouquets of flowers to decorate cakes. 1 Cr. (0-3).

FHD 240
CHOCOLATE WORK
This course will teach the student to identify and use unsweetened chocolate, unsweetened cocoa powder, semisweet chocolate, dark sweet chocolate, and milk chocolate. The student will prepare chocolate scrolls, chocolate shavings, chocolate layer cakes, chocolate tortes, chocolate mousse, chocolate cheesecake, chocolate cookies and candies. 1 Cr. (0-3).

FHD 244
ROLLS AND BREAD BAKING
An introduction to the various white, whole wheat, and specialty breads and rolls, with emphasis on exact weight and measures, types of flours, shortening, bakeshop tools, and equipment. Special attention is placed upon a multitude of shapes and designs of roll doughs. 1 Cr. (0-3).

FHD 245
EQUIPMENT AND LAYOUTS
Familiarizes students with current types of equipment and ways to lay out facilities for best production, service, safety, and sanitation. 3 Cr. (3-0). *Prerequisite: FHD 121, or commercial or institutional work experience.*

FHD 247
BAKING DESSERTS I
Students will learn ingredients and techniques to produce pies, cakes, cookies, crepes, and puddings. 1 Cr. (0-3).

FHD 248
BAKING DESSERTS II
Students will learn preparation of tortes, souffles, mousses, bombes, genoise, and meringues. 1 Cr. (0-3).

FHD 250
HOSPITALITY, DIETETIC WORK EXPERIENCE (MANAGEMENT SYSTEMS III)
Prior to the beginning of the fourth semester a work experience of 120 hours is required. Dietetic Technician students work in an institutional dietary department under a registered dietitian. Food and Hospitality students work in the food and hospitality industry. Students are evaluated by employer/supervisor, submit a written report, and discuss their experience with the instructor. 1 Cr. (120 Clinical Hours). *Prerequisite for Dietetic Technician Program: FHD 123.*

FHD 260
RESTAURANT BUSINESS & LAW
Introduction to the various types of food service. Emphasis on market analysis, finance, strategies, and laws which affect restaurants. Includes in-depth feasibility study. 3 Cr. (3-0).

FHD 261
ADVANCED GARDE MANGER AND BUFFET CATERING
Creation of display pieces and cold food presentations to highlight the buffet. Practice in designing and coordinating the cold buffet. Emphasis on such classical techniques as aspic, chaud froid, force meats, pates and terrines, galantines, and mousses. 3 Cr. (2-3).

FHD 263
CLASSICAL CUISINE
Advanced study of classical cuisines and their contribution to modern culinary arts. Preparation of French and Italian classical menu items. Practice in planning, preparing, and merchandising of multi-course banquets and special events. 3 Cr. (1-6).

FHD 264
CAKE DECORATING II
This course demonstrates advanced skills in cake decorating, including lattice work, string work, lily nail flowers, figure piping, basketweave, gum paste, sugar folds and assembling and decorating a wedding cake. 1 Cr. (0-3).

FOREST TECHNOLOGY (FOR)

FOR 111
DENDROLOGY
Classification, identification, and distribution of woody plants in the United States. Emphasizes species of local commercial importance. 3 Cr. (2-3).

FOR 113
FOREST MENSURATION
Measurement of standing trees, of logs and other cut wood products. Calculating the contents of these products in terms of board feet, cubic feet, cords, and pounds. Measuring growth in trees and forests. 3 Cr. (2-3).

FOR 115
FOREST BOTANY
The study of plant physiology and anatomy with special reference to trees. The stem structure of trees and the identification of commercial tree species based on microscopic characteristics of wood. 3 Cr. (2-3).

FOR 120
FOREST SURVEYING I
Introduction to surveying, including the fundamentals of plant surveying and the use and care of equipment. 2 Cr. (1-3).

FOR 122
PHOTOGRAMMETRY
The basic techniques of photogrammetry (the use of photographs in surveying and forest measurement), photo interpretation. 2 Cr. (1-3).

FOR 124
ADVANCED FOREST MENSURATION
Determining the quality of logs and trees. Estimating volumes of large timber areas by different sampling techniques. The use and interpretation of aerial photos in forest surveys. 3 Cr. (2-3).

FOR 125
FOREST ECOLOGY
Introduction to ecology, upon which the management of forest and wildlife resources may be used. Improves the student's understanding of the ecological relationship of forest and wildlife communities. 3 Cr. (3-0).

FOR 230
SAWMILLING
Emphasizes practical skills in sawing lumber to grade in a safe and economical manner. 3 Cr. (1-6).

FOR 232
FOREST SURVEYING II
Theory and practice of plane surveying techniques used in property and boundary surveys, map making, construction surveys, and computations. Emphasizes the use of these techniques in forestry. 3 Cr. (2-3). *Prerequisite: FOR 120.*

FOR 233
EQUIPMENT AND MACHINERY
The operation, care and maintenance of logging machinery, forest fire control equipment and related mechanical devices commonly used in forest operations. 3 Cr. (2-3).

FOR 234
TIMBER HARVESTING
Cutting trees. Skidding and moving timber from the woods to the point of manufacture. Modern logging methods and techniques. Includes cutting tree stems into lengths and units of highest economic value. 3 Cr. (2-3).

FOR 236
SILVICULTURE
Forestry practices and systems used to grow and manage trees and forests for the sustained production of timber products. 3 Cr. (2-3).

FOR 237
FOREST RECREATION
The development, construction, and maintenance of recreation facilities in a forest environment. 1 Cr. (0-3).

FOR 238
LUMBER DRYING
The process of drying lumber by natural or artificial methods. Includes layout of the lumber yard, dry kiln operation and the handling and storage of green lumber. 3 Cr. (2-3).

FOR 239
WOOD PROPERTIES AND UTILIZATION
Physical characteristics, identification and use of wood. Includes machinery and manufacturing major wood products derived from commercially importance species. 1 Cr. (0-3).

FOR 240
PRODUCTION MANAGEMENT
Introduction to the processes of obtaining, manufacturing and marketing wood products in order to produce a profit. 3 Cr. (1-6).

FOR 241
LUMBER AND LOG GRADING
Separating and grading (sorting wood on the basis of quality) hardwood and softwood lumber according to wood industry standards. Sorting hardwood and softwood logs on the basis of lumber grade to assure high quality lumber products. 3 Cr. (1-6).

FOR 245
WILDLIFE MANAGEMENT
The natural history and environmental impact of animals and nature to Pennsylvania and other parts of the world. Emphasis will be placed in wildlife's influence on the forest. 3 Cr. (2-3).

FOR 246
FOREST LAND MANAGEMENT
Basic concepts of managing publicly and privately owned forest lands used for more than one purpose (for example, recreation and logging). Shows the importance of managing the land for recreation, wildlife, and water. 3 Cr. (2-3).

FOR 248
FOREST PROTECTION
The cause and effects of forest fires. Methods used to control forest fires. The identification, effects and control of other harmful agents, principally insects and diseases. 3 Cr. (3-0).

GEOGRAPHY (GEO)

GEO 101
PHYSICAL GEOGRAPHY
Introduction to the fundamentals of geography — maps, mapping, land, water, soil, vegetation, atmosphere, climate. Covers the relationship between physical and human environment. 3 Cr. (3-0).

GEOLOGY (GEL)

GEL 105
PHYSICAL GEOLOGY
Basic concepts in the study of the Earth. Relationships between Earth materials and the geologic agents and processes that create and modify minerals, rocks, landforms, continents, and the ocean basins. 4 Cr. (3-3).

GEL 106
HISTORICAL GEOLOGY
Origin of the Earth, evolution of its crust, and the development and evolution of life. Relationships among rock units as evidence for geologic history; fossils as documents of evolution, chronology and environment; relative and absolute age dating of the Earth. 4 Cr. (3-3).

GEL 290
SPECIAL STUDIES IN GEOLOGY
Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. (1-3, laboratory as required).

GERMAN (GER)

GER 111
BEGINNING GERMAN I
Basic grammar and language structure. Comprehension, speaking and reading, with the emphasis on pronunciation and accent. 3 Cr. (3-0). *Prerequisite: Permission of the instructor.*

GER 121
BEGINNING GERMAN II
Continuation of GER 111. 3 Cr. (3-0). *Prerequisite: GER 111.*

GRAPHIC ARTS (GCO)

GCO 511
LAYOUT AND DESIGN
Materials, tools and techniques used in preparation of copy for reproduction; paste-up and color separation overlays. 4 Cr. (2-6).

GCO 512
TYPOGRAPHIC COMPOSITION
Fundamentals of typesetting. Theory and practice in the care and use of composing (typesetting) machines, both hot and cold (mechanical) and cold (photo). 4 Cr. (2-6).

GCO 515
LAYOUT AND DESIGN
For students enrolled in programs other than Graphic Arts. Materials, tools and techniques used in preparation of copy for reproduction; paste-up and color separation overlays. 3 Cr. (2-3).

GCO 516
TYPOGRAPHIC COMPOSITION
For students enrolled in programs other than Graphic Arts. Fundamentals of typesetting. Theory and practice in the care and use of composing (typesetting) machines, both hot and cold (mechanical) and cold (photo). 3 Cr. (2-3).

GCO 521
PROCESS CAMERA
Darkroom procedures for reproducing line and halftone copy using process cameras. 4 Cr. (2-6).

GCO 522
FILM ASSEMBLY AND IMPOSITION
Study and application of various methods for assembling negatives and positives to create flats (preparation for making offset plates). 4 Cr. (2-6).

GCO 525
PROCESS CAMERA
For students in programs other than Graphic Arts. Darkroom procedures for reproducing line and halftone copy using process cameras. 3 Cr. (2-3).

GCO 526
FILM ASSEMBLY AND IMPOSITION
For students in programs other than Graphic Arts. Study and application of various methods for assembling negatives and positives to create flats (preparation for making offset plates). 3 Cr. (2-3).

GCO 631
PLATEMAKING, SUBSTRATES AND FINISHING
Identification, selection, and relationship of paper and board stocks. Non-printing conversions for the printing, publishing, and allied industries. Theory and applications related to the various types of offset plates and processing procedures. 4 Cr. (2-6).

GCO 632
PRESS OPERATIONS
Printing press operation. Ink mixing and matching, registration; preventive maintenance for quality analysis. 4 Cr. (2-6).

GCO 635
PRINTING ESTIMATING PRACTICES
Theory and practice in estimating job cost, writing specifications and planning jobs for production. 3 Cr. (3-0).

GCO 641
ADVANCED TYPOGRAPHIC COMPOSITION
Continuation of GCO 511 and GCO 512. Emphasizes photo composition as it relates to the composition industry. Students will do individual projects and/or live work. 3 Cr. (1-6). *Prerequisites: GCO 511, GCO 512.*

GCO 642
ADVANCED PROCESS CAMERA AND STRIPPING
Advanced study in black and white tone reproduction, special effects and basic color procedures. Advanced work in color stripping and photoart techniques. 3 Cr. (1-6). *Prerequisites: GCO 521, GCO 522.*

GCO 645
PRINTING PROCESSES
Theory and application of the four major printing processes: letterpress, lithography, gravure, and silk screen. 3 Cr. (1-6).

HISTORY (HIS)

HIS 115
WORLD CIVILIZATION I
A study of the history of humankind from its beginnings to A. D. 1500. Equal emphasis is placed on the political, economic, and special development of Western and non-Western civilizations. 3 Cr. (3-0).

HIS 125
WORLD CIVILIZATION II
A study of the history of humankind from A. D. 1500 to the present. Equal emphasis is placed on the political, economic, and social development of Western and non-Western civilizations. 3 Cr. (3-0).

HIS 203
CIVIL WAR HISTORY
A history elective designed for anyone having either a general or specific interest in the American Civil War. The subject is studied through slide tours of the Eastern battlefields, a review of available print materials and through research projects. Topics include the general history of the war, an examination of soldier life, prisons and hospitals, sources for research, recruitment and training. 3 Cr. (3-0).

HIS 210
LATIN AMERICAN CIVILIZATION
A study of the growth and development of Hispano and Luso America from the Age of Discovery and Conquests to the present day. Emphasis will be given to the interrelationships among the Commercial sector, the Roman Catholic Church, the Military, and the State and the effects of this relationship on the development of society. Special emphasis will be placed on the emergence, success and/or failure of democratic procedures, the relationship between Latin American and the United States and the future economic development of the region. 3 Cr. (3-0).

HIS 231
UNITED STATES—SURVEY I
Political, economic, and social development of the United States from colonial times through the Civil War and Reconstruction Period. 3 Cr. (3-0).

HIS 241
UNITED STATES—SURVEY II
Political, economic, and social development of the United States from 1977 up to and including the Civil Rights Movement. 3 Cr. (3-0).

HIS 290
SPECIAL STUDIES IN HISTORY
Individual guidance in advanced studies. Admission by permission of the instructor. 1-3 Cr. (1 to 3-0).

HORTICULTURE (HRT)

HRT 110
SOILS AND FERTILIZERS
Study of soil texture, structure, organic matter and plant nutrients as related to the use of pH controllers and fertilizers. Includes synthetic soils and techniques used to control insects, disease and weed problems. 3 Cr. (2-3).

HRT 111
ORNAMENTAL PLANTS
An introduction to the study of annuals, biennials, perennials, roses, chrysanthemums, foliage plants and landscape trees, shrubs, vines and ground covers. Identification and use of these plants in the landscape is stressed. 2 Cr. (1-3).

HRT 112
HORTICULTURE OPERATIONS AND STRUCTURES
An introduction to the greenhouse and nursery industry with topics covering: specialized horticultural structures (such as various types of greenhouses, overwintering structures, lath houses, cold frames and hot beds), wholesale and retail marketing of horticultural products, the economic impact of the industry and job availability. 3 Cr. (2-3).

HRT 120
BEDDING PLANTS PRODUCTION
Identification, outdoor culture and greenhouse production practices of annuals, perennials and bulbs used in bedding applications for both interior and exterior plantscape applications. 3 Cr. (2-3).

HRT 121
LANDSCAPE PLANTS
The identification and use of deciduous trees, shrubs, vines, ground covers, and their varieties and cultivars. 3 Cr. (2-3). *Prerequisite: Ornamental Plants.*

HRT 122
FRESH AND PERMANENT FLORAL DESIGNS
Instruction in and application of principles in the art of floral design. Includes form, styles and composition. Covers designing floral arrangements, baskets, bouquets in silks, fresh flowers and corsages. 3 Cr. (1-6).

HRT 210
PLANT PROPAGATION
Theory, practice, and principles of plant propagation by sexual and asexual means—applications in floriculture production and nursery production. 3 Cr. (2-3).

HRT 211
GREENHOUSE POTTED PLANT PRODUCTION
Production of potted plants and holiday crops using commercial techniques. Includes production, planning, crop rotation and the role of management. Students will grow crops in the College's greenhouses. 3 Cr. (2-3).

HRT 212
SPECIALTY FLORAL DESIGNS
A continuation of HRT 122. Covers designing dried, holiday and sympathy floral designs. Stresses shop layout and routine procedures in the operation of a flower shop. 3 Cr. (1-6). *Prerequisite: HRT 122.*

HRT 213
INTERIOR PLANTSCAPE PLANTS
Identification, culture, propagation and use of house and conservatory foliage plants. Course includes artificial lighting, interior landscaping for homes, malls and business, soils and fertilizers for commercial growing, insects, diseases and cultivation problems associated with foliage plants. 3 Cr. (2-3).

HRT 214
NURSERY PRODUCTION
Nursery aspects of plant propagation and liner production. Emphasizes field and container production techniques, production schedules, nursery soil management, weed control, cost analysis, ball and burlapping, transplanting and nursery equipment. 3 Cr. (2-3). *Prerequisite: Horticulture Operations and Structures.*

HRT 215
LANDSCAPE PLANTS AND DESIGN APPLICATIONS
Advanced study of plant identification. Emphasizes broad leaved and narrow leaved evergreens—their varieties and cultivars. The basics of landscape plant usage, development of plant symbols and their meaning in the landscape plan is covered. Preliminary sketches using symbols are assigned. 3 Cr. (2-3). *Prerequisites: HRT 121, HRT 111.*

HRT 216
TURF MANAGEMENT
Principles and practices of the establishment and maintenance of turfgrass areas for ornamental and recreational purposes. Commonly used grasses are studied for their characteristics, growth habits and uses. 3 Cr. (2-3).

HRT 220
HORTICULTURE MECHANICS
Operation and maintenance of horticulture equipment. Includes small gasoline engines, electric motors, electrical fans, environmental controls, soil working and irrigation equipment used in the greenhouse and nursery industry. 3 Cr. (2-3).

HRT 221
GREENHOUSE CUT FLOWER PRODUCTION
Production of cut flowers. Emphasizes techniques used for important commercial cut flower crops. Includes production, planning and crop rotation. Students will grow crops in the College's greenhouses. 3 Cr. (2-3).

HRT 222
GREENHOUSE ENVIRONMENT AND CROP MANAGEMENT
Operation and management of the greenhouse environment including heating and cooling systems, CO2 enrichment, H.I.D. lighting systems and humidity control. Also, topics on business procedures, crop scheduling, cost control and the use of the small business computer and available software as a business management tool for the greenhouse. 3 Cr. (2-3).

HRT 223
FLOWER SHOP MANAGEMENT AND WEDDING DESIGNS
Emphasizes buying, pricing, sales, inventory, personnel, record keeping and general principles related to the commercial retail flower shop. Lab practice in perfecting design techniques and developing originality—emphasizes wedding designs. 3 Cr. (2-3).

HRT 224
LANDSCAPE CONSTRUCTION
Techniques used to build landscape features. Includes the construction of patios, walks, retaining walls, fences, fountains, waterfalls, pools and steps using various materials. Specifications, bidding and pricing of landscape jobs, basic surveying techniques, drainage and grading are also covered. 3 Cr. (1-6).

HRT 225
LANDSCAPE DESIGN
Covers the principles and problems of landscape design. Emphasizes the effective use of plant materials in developing landscaped areas—for residential, public and commercial areas—to make them as attractive and useful as possible. Includes basic drawing and drafting principles; stress is placed on the preparation of planting plans, detail drawings such as cross sections and specifications. 3 Cr. (1-6). *Prerequisites: HRT 111, HRT 121.*

HRT 226
LANDSCAPE MANAGEMENT
Care and maintenance of trees and shrubs including pruning, fertilizing, planting, climbing, guying, cabeling, staking, plant protection, spraying and proper spray application, tree and shrub evaluation, landscape equipment and their proper use. 3 Cr. (2-3). *Prerequisite: HRT 239.*

HRT 239
PLANT INSECTS AND DISEASES
The insects and diseases of ornamental plants. The nature, structure, harmful effects and control of insects and related forms. The most common and harmful plant diseases are studied for identification and control. 3 Cr. (2-3). *Prerequisite: BIO 111.*

HUMAN SERVICES (HSR)

HSR 111
INTRODUCTION TO HUMAN SERVICE
Examines the range of human problems and the programs and systems designed to help individuals address problems. Students explore the roles they might assume as human service workers. 3 Cr. (3-0).

HSR 121
HELPING PROCESS AND CRISIS INTERVENTION
Designed to familiarize students with the fundamental techniques involved in interviewing and crisis intervening in human service practice. 3 Cr. (3-0). *Prerequisite: HSR 111 or PSY 111.*

HSR 125
FUNDAMENTALS OF COUNSELING
Refines students' interviewing skills and develops skills in group work, behavior modification, decision making, relaxation therapy, assertiveness training and other counseling techniques. 3 Cr. (3-0). *Prerequisite: HSR 111 or PSY 111.*

HSR 240
MANAGEMENT AND ADMINISTRATION IN HUMAN SERVICES
Develops students' understanding of planning, evaluation, management, community relations and other activities which affect the operation of a human service agency. Focuses on the special needs, such as fund raising, of non-profit agencies. 3 Cr. (3-0). *Prerequisite: HSR 111 or work experience in the human service field.*

HSR 241
GROUP PROCESSES
A comprehensive exploration of the history, techniques, and various models of group counseling as viable therapeutic intervention. Special emphasis is placed upon group dynamics, leadership skills and brief focused applications. Experiential as well as traditional learning is expected of enrolled students. 3 Cr. (3-0). *Prerequisite: HSR 125.*

HSR 251
HUMAN SERVICE PRACTICUM I
Practicum courses are field work experiences held under Cooperative Education guidelines. These internship experiences allow students to learn through actual work in a human service agency. Students will work alongside professionals, study the agency in which they work, and relate theory to actual practice. 3 Cr.

HSR 252
HUMAN SERVICE PRACTICUM II
Field work experiences held under Cooperative Education guidelines. See HSR 251 for additional information. 3 Cr.

HSR 260
HUMAN SERVICE TOPICAL APPLICATIONS
By studying a particular problem or population, students learn how theory and skill are applied in a specific setting. Seminar courses are planned for such areas as gerontology, drug and alcohol counseling, child care and child development, mental health/mental retardation and other similar areas. Professionals from the field and visitations will, in many cases, supplement classroom learning. 3 Cr. (3-0).

HSR 261 through HSR 279 will focus on specific topics. Courses will range from one to three credits.

INDUSTRIAL DRAFTING (IND)

IND 714
BASIC DRAFTING (8 weeks)
Introduction to industrial drawing; lettering; geometric drawing; orthographic projections; pictorial projections; sectioning; dimensioning; auxiliary views; revolutions; sketching; reproduction processes; threads and fasteners. 5 Cr. (3-21).

IND 715
MACHINE DRAFTING (8 weeks)
Making accurate detail drawings based on complex industrial machine parts. Assembly and sub-assembly drawing based on industrial layouts. Applying close tolerance dimensioning; geometric tolerancing; true position dimensioning. Surface finish specifications which conform to industrial and military standards. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 724
GEARS, CAMS, AND MECHANISMS (8 weeks)
Study of power transmission, pulleys, gears, sprockets, applied with mechanisms used to create motion in machines through linkage. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 725
SHEET METAL AND PIPING (8 weeks)
A study of sheet metal intersections and developments; cones; transition pieces. Connection of skewed position openings with irregular shaped duct. A comprehensive study of piping systems and piping layout drawings. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 834
CIVIL DRAFTING (8 weeks)
Students make and use maps. Plotting traverses from field notes; gathering surveying information; drawing contour maps. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 835
STRUCTURAL DRAFTING (8 weeks)
Students make shop drawings based on the original concept of a structure as conceived by the architect or engineer. Includes detailed instructions for punching, assembling, bolting, riveting, and welding. Basic types of loads and stresses are emphasized. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 844
ARCHITECTURAL DRAFTING (8 weeks)
Residential housing—dining rooms, bedrooms, living rooms, baths, kitchens. Identifying the components of house construction; stair layouts; doors; windows; fireplaces; structural members and loading; working drawings. 5 Cr. (3-21). *Prerequisite: IND 714.*

IND 845
ELECTRICAL AND ELECTRONIC DRAFTING (8 weeks)
Practical applications of drafting in the field of electrical construction—both domestic and commercial uses. House diagrams with circuit schematics, wiring diagrams and developing bills of materials. Types of electronic diagrams, symbols, reference designations and identification of essential parts. National Electric Code will be explored and applied. 5 Cr. (3-21). *Prerequisite: IND 714.*

JOURNALISM (JOU)

JOU 111
NEWS WRITING
Techniques of basic news writing for print media and covering a community or in-house news beat. Emphasis on organizing information and rewriting to develop skills. Detailed critiques and class discussion of student writing. Introduction to the video system of writing. 3 Cr. (3-0).

JOU 114
MASS MEDIA PHOTOGRAPHY
Introduction to photography with an adjustable camera and auxiliary equipment. Emphasizes techniques for producing black and white photos for news and related mass media. Students develop skills related to lighting, imaginative posing, action, and in-camera cropping. Course assumes no previous experience. Students must furnish camera. 3 Cr. (3-0).

JOU 121
REPORTING PUBLIC AFFAIRS
Development of news writing skills through class assignments and news beat coverage. Emphasis on deadlines and tight thorough writing. Focus on public events reporting in practicum and in the field. 3 Cr. (3-0). *Prerequisite: JOU 111.*

JOU 122
INTRODUCTORY NEWSPAPER PRODUCTION
Beat reporting and writing for student publications and/or the College's information services under deadline pressure. Introduction to organizational responsibilities and management through reportorial team assignments or committee assignments. Includes basics of mechanical production and publication planning. Continued use of video writing. 2 Cr. (0-6). *Prerequisite: JOU 111.*

JOU 231
FEATURE WRITING
Survey of news features including brites, color stories, sidebars, and personality sketches. Introduction to related writing for pamphlets, brochures, in-depth reports and magazine fillers. Techniques of interviewing and research. Writing with goal of publication for pay. 3 Cr. (3-0).

JOU 232
COPYREADING AND EDITING
Preparing material for publication with consideration for legal and ethical standards. Judicious editing of both traditional and video copy, copyreading, headline writing, picture editing, typography, layout and planning relative to print media production. 3 Cr. (3-0). *Prerequisites: JOU 111 and JOU 121, or GCO 515, or GCO 511, or permission of the instructor.*

JOU 233
NEWSPAPER MANAGEMENT AND PRODUCTION
Experience in a responsible, managerial position with student publications or in College information services. Focus on development of skill in news judgment, planning, and production. Students must have demonstrated ability to complete assignments with minimal supervision. Students must coordinate individualized instructional consultations. 2 Cr. (0-6). *Prerequisite: JOU 122.*

JOU 244
PUBLICATION MANAGEMENT
Strengthens skills developed in Newspaper Management and Production. In addition to on-going use of skills, the course requires planning, staffing and production of cost-conscious medium for a pre-designated audience. 2 Cr. (0-6). *Prerequisites: JOU 232, JOU 233.*

LANDSCAPE NURSERY TECHNOLOGY
See Horticulture (HRT)

LIGHT DUTY DIESEL SERVICE (LDD)

LDD 611
SHOP AND ENGINE PRINCIPLES (8 weeks)
Includes the basics of precision mechanical measurement, basic fastening devices and fittings, operating principles and theories of basic engine components and lubricants. 6 Cr. (6-18).

LDD 612
ENGINE COMPONENTS (8 weeks)
Theory of operation and design of diesel engine with special emphasis on diesel engine components and accessories. 6 Cr. (6-18).

LDD 621
ENGINE DIAGNOSIS AND SERVICE (8 weeks)
Careful study of diesel engine removal procedures. Basic principles of engine and cylinder head service with emphasis on induction and exhaust system service. 6 Cr. (6-18).

LDD 622
FUEL SYSTEMS (8 weeks)
Introduction to the theory and function of fuel injection and pumping systems. Maintenance, inspection and troubleshooting techniques of combustion chambers and fuel system service. 6 Cr. (6-18).

MACHINIST GENERAL AND TOOLMAKING TECHNOLOGY (MTT)

MTT 110
MACHINING I
Use of hand tools to produce layouts and objects by hand. The theory and practice of grinding tool bits, turning facing, taper turning, boring and threadcutting on the lathe. Theory and practice of metal cutting bandsaws. Learn blueprint reading. 5 Cr. (3-7).

MTT 115
MACHINING II
Use of hand tools to produce layouts and objects by hand. Simple filing, sawing and assembly techniques. Use of drill presses, drill sharpening, drilling to a layout, drill jigs. Producing parallel and square surfaces, shaping rectangular objects and setup operations of drill presses, milling machines and shapers. Learn blueprint reading. 5 Cr. (3-7).

MTT 120
MACHINING PROCESS
Fundamental concepts of metal removal using multi-tooling machining. Use and care of carbide tooling and automatic screw machines. 5 Cr. (3-7). *Prerequisites: MTT 110, MTT 115 or advanced placement.*

MTT 125
METROLOGY/QUALITY CONTROL
The use of precision instruments for measurement and inspection of machined parts—includes the use of comparators, protection comparators, coordinate measuring machine, surface plate, toolmakers microscope, hardness testing and quality control techniques. 5 Cr. (3-7). *Prerequisites: MTT 110, MTT 115 or advanced placement.*

MTT 210
TOOL TECHNOLOGY
Theory and practice in machining, cutting and assembly of dies, molds, jigs and fixtures. Layout, boring and indexing to close tolerances using threading and gearing applications. 5 Cr. (3-7). *Prerequisites: MTT 110, MTT 115.*

MASS COMMUNICATIONS (MCM)

MCM 111
INTROOUCTION TO MASS COMMUNICATION
A basic survey course which examines the many different mass media, including newspapers, magazines, radio, television, motion pictures, book publishing, and the recording industry. Examines such areas as advertising in commercial media, photography and photojournalism, mass media news, networks, syndicates, cable, satellite communications, legal issues in the working press, regulatory control of the mass media, the audience and the effects of mass communication. Includes a glossary of media terms. 3 Cr. (3-0).

MCM 122
MEDIA AND LAW
Concentrated survey of mass media and its relationship to the law. Includes intense examination of libel, slander, right to privacy, privilege, provisions of the First Amendment, etc. Considers precedent-setting court rulings and ongoing case histories. 3 Cr. (3-0).

MCM 242
MEOIA MANAGEMENT AND COMMUNITY RESPONSIBILITY
This advanced course studies the commercial media in the U.S. as an individual business serving a specific community or market. Includes the function of the media plant as a competitive, small or medium-sized business in the marketplace. Covers ethical considerations inherent in the communication business. Topics are discussed and evaluated in class and applied through case studies. Students apply skills through designing a small-market media plant. 3 Cr. (3-0).

MCM 243
PUBLIC RELATIONS
A basic course which surveys specialized writing and techniques and the use of a range of media (print, electronic) for disseminating information to particular audiences, including in-house groups. Includes practical study of news releases, house organs and other public relations vehicles. Students apply principles and techniques in simulated or actual projects. 3 Cr. (3-0).

MATHEMATICS (MTH)

MTH 001
ARITHMETIC
Presents the basic concepts and skills of arithmetic to prepare students for required mathematics courses. Post-tests are used to insure mastery of units covered. 3 Institutional Cr. (3-0).

MTH 002
BASIC ALGEBRA
Basic skills and concepts of arithmetic and algebra are presented based on the students' aptitudes and needs. Post-tests are used to insure mastery of units covered. More than one semester may be required for mastery of the objectives. 3 Institutional Cr. (3-0).

MTH 101
INTRODUCTION TO MATHEMATICS I
Exploration of number and geometric patterns. Problem solving, mathematical recreations, flow charts, sets, logic, systems of numeration. Introduction to algebra and other selected topics. A general education course for non-mathematics and non-science majors. 3 Cr. (3-0). *Prerequisite: One year of high school mathematics.*

MTH 102
INTRODUCTION TO MATHEMATICS II
Probability, statistics, selected topics from geometry, number systems, and other selected topics. A general education course for non-mathematics and non-science majors. 3 Cr. (3-0). *Prerequisite: MTH 101.*

MTH 103
COLLEGE ALGEBRA & TRIGONOMETRY I
Properties of real numbers, basic algebraic operations, relations and functions, equations and inequalities, basic right triangle trigonometry, sine and cosine laws. Designed for general studies and technology students who need a thorough precalculus algebra background. 3 Cr. (3-0). *Prerequisite: Two years of high school algebra, and MTH 002 or MTH 105, or placement by examination.*

MTH 104
COLLEGE ALGEBRA & TRIGONOMETRY II
Continuation of MTH 103. Circular, trigonometric, inverse, exponential, and logarithmic functions, complex numbers, polar coordinates, determinants, systems of equations, linear inequalities and other selected topics. 3 Cr. (3-0). *Prerequisite: MTH 103 or placement by examination.*

MTH 105
INTERMEDIATE ALGEBRA
Skills and concepts of polynomials, equations and formulas, ratio and proportion, variation, systems of linear equations, factoring, quadratic equations, trigonometry and other selected topics. For associate degree automotive students. 3 Cr. (3-0). Cannot be used to satisfy General Studies requirements. Cannot be used as an elective credit in programs requiring MTH 103. *Prerequisite: One year of high school algebra or placement by mathematics exam.*

MTH 107
APPLIED CALCULUS
Relations and functions, conics, limits, derivatives and integration of algebraic functions. Trigonometric functions and transcendental functions, methods of integration and applied problem solving. Excellent preparation for students who intend to sit for the Engineer in Training Examination. 3 Cr. (3-0). *Prerequisite: College algebra and trigonometry or permission of instructor.*

MTH 201
ELEMENTARY STATISTICS I
Introduction to frequently applied statistical methods—descriptive statistics, frequency distributions, elementary probability, binomial, normal and t-distributions, Central Limit Theorem, tests of hypotheses, confidence intervals, regression and correlation, and other topics as time permits. For general studies and technology students who need a basic working knowledge of statistics. 3 Cr. (3-0). *Prerequisite: One year of high school algebra.*

MTH 202
ELEMENTARY STATISTICS II
Continuation of MTH 201. Emphasizes applied statistical techniques and design of experiment; Student T, Chi-square, F-tests, linear regression, correlation, and models; analysis on enumerative data; analysis of variance; non-parametric statistics. Offered regularly in the spring terms of even numbered years. 3 Cr. (3-0). *Prerequisite: MTH 201 or permission of instructor.*

MTH 203
STATISTICS WITH COMPUTER METHODS
Introduction to frequently applied statistical methods with emphasis on computer models and solutions. Topics include statistical models, statistical inference, distributions, probability and random variables. 3 Cr. (3-0).

MTH 204
MATRIX ALGEBRA
Matrices, determinants, inverse of a matrix, rank and equivalence, linear equations and linear dependence, vector spaces, linear transformations, characteristic equations of a matrix, bilinear, quadratic, and Hermintian forms. Recommended for computer science, science, and technology students. May be used as a core requirement or general elective for general studies students. Offered regularly in the spring terms of odd numbered years. 3 Cr. (3-0). *Prerequisite: Two years of high school algebra, MTH 103, or permission of instructor.*

MTH 237
DISCRETE MATHEMATICS
Introduction to discrete structures. Topics include logic and proof, sets, combinatorics, graphs, modeling, homomorphisms, boolean algebra, logic networks, coding theory, finite state machines and computability, formal languages and general algebraic structures emphasizing semigroups, monoids and groups. 3 Cr. (3-0). *Prerequisite: MTH 238, or permission of instructor.*

MTH 238
CALCULUS I
Algebra review. Functions, limits, continuity, derivatives, velocity, rates of change, chain rule, curve sketching, related rates, maximum-minimum theorems, differentials, applications, antiderivatives. 4 Cr. (4-0). *Prerequisite: MTH 103 and MTH 104, or placement by math exam, or permission of instructor.*

MTH 248
CALCULUS II
Continuation of MTH 238. Emphasizes the definite integral, applications of integration, transcendental functions, techniques of integration, and other selected topics. 4 Cr. (4-0). *Prerequisite: MTH 238.*

MTH 249
LINEAR ALGEBRA
The study of vector spaces. Topics include linear independence, bases and dimension, linear transformation matrices, and systems of linear equations. 3 Cr. (3-0). *Prerequisite: MTH 238.*

MTH 290
SPECIAL TOPICS IN MATHEMATICS
By special arrangement for individuals or groups. Study of special topics, i.e., Differential Calculus, Modern Algebra, Modern Geometry. Arrangement to be made through instructor and Division Director. 1-4 Cr.

MTH 500
TECHNICAL MATHEMATICS II
Topics from algebra, geometry, right triangle trigonometry, and other areas. Emphasizes practical problems in the student's area of concentration. 3 Cr. (3-0). Cannot be used to satisfy math requirements for students in the General Studies Associate Degree program. *Prerequisite: MTH 710 or equivalent or permission of instructor.*

MTH 515
GENERAL AVIATION MATHEMATICS
Fundamental operations with common and decimal fractions, mixed numbers, square root algorithm, area, volume, ratio, signed numbers, and other selected topics. For aviation students. 3 Cr. (3-0).

MTH 710
TECHNICAL MATHEMATICS I
Arithmetic operations with whole numbers, common and decimal fractions, percent, basic principles of measurement, fundamentals of the metric system, ratio and proportion, and practical geometry. Other selected topics in technical-vocational mathematics include graphs and consumer mathematics or basic algebra and basic trigonometry, depending on a student's curriculum. For students in certificate programs. 3 Cr. (3-0). Placement by mathematics examination.

MEDICAL TERMINOLOGY (MTR)

MTR 101
MEDICAL TERMINOLOGY I
Introduction to medical terminology. Emphasizes etiology, symptomatology, pathology, and diagnostic procedures. 3 Cr. (3-0).

MTR 102
MEDICAL TERMINOLOGY II
Continuation of MTR 101. Students learn to read and understand the language of medicine. Emphasizes the meanings of root words and their combining forms. 3 Cr. (3-0). *Prerequisite: MTR 101.*

OCCUPATIONAL THERAPY ASSISTANT (OCT)

OCT 100
FOUNDATIONS OF OCCUPATIONAL THERAPY
The field of rehabilitation will be defined with emphasis on the role of occupational therapy. The course will explore the history of the profession with the development and practice of its philosophy and principals. The role of the Registered Occupational Therapy Assistant will be reviewed. The concept of occupation as a health determinant will be presented. Students will observe populations across the developmental continuum in selected community services. 3 Cr. (2-3).

OCT 101
HUMAN OCCUPATIONS
The course will focus on the observations, analysis, and practice of human occupations. Topics will include areas of work, self-care and play/leisure across the lifespan. The teaching-learning process will be incorporated. 2 Cr. (1-3).

BCT 116
BASIC WOODWORKING
Theory and lab assignments in basic woodworking. The technical aspects of hand and machine woodworking, construction materials, use of woodworking tools and equipment, and shop safety. Methods and techniques of applying woodworking skills in a trade or professional area. 2 Cr. (1-3).

OCT 120
DEVELOPMENTAL HABILITATION
A review of lifespan human development with an emphasis on those conditions which threaten occupational performance and need satisfaction. Specific techniques of occupational therapy intervention and related terminology will be integrated. Laboratory experiences and community service in selected settings is required. 5 Cr. (3-6). *Prerequisite: OCT 100, OCT 101.*

OCT 200
PHYSICAL/SOCIAL REHABILITATION
The role of Occupational Therapy in treating physical dysfunction across the lifespan is explored. Students will study the pathology of disabling diseases and conditions and their impact on the need satisfaction process. Fieldwork I is included and provides exposure to clinical settings. Case studies and progress note documentation will be practiced, together with a group sharing of clinical experiences. 4 Cr. (2-6). *Prerequisite: OCT 120. Corequisite: OCT 200.*

OCT 201
PHYSICAL/SOCIAL REHABILITATION METHODS
Through activity analysis and simulation activities the student will gain insight and skill in teaching and adapting self-care, work, and play/leisure occupations for the physically disabled person. Positioning techniques, body mechanics, assistive devices, splinting, and techniques for work simplification and energy conservation will be reviewed. Students will be exposed to techniques for standardized evaluations and observations of range of motion, strength coordination, endurance and sensory function. Emphasis will be on techniques to maximize independence, assure safety, minimize architectural barriers and prevent deformity. 2 Cr. (1-3). *Corequisite: OCT 200.*

OCT 220
PSYCHOSOCIAL REHABILITATION
Occupational Therapy in the treatment of individuals with psychosocial disorders across the lifespan is explored. Current techniques in rehabilitation will be reviewed with emphasis on the registered occupational therapist and certified occupational therapy assistant's (COTA's) role within the treatment team. Fieldwork I will be incorporated. Case studies and progress note documentation will be practiced together with a group sharing of experiences. 4 Cr. (2-6). *Prerequisite: OCT 120. Corequisite: OCT 221.*

OCT 221
PSYCHOSOCIAL REHABILITATION METHODS
Through activity analysis and simulation activities the student will gain insight and skill in teaching and adapting self-care, work, and play/leisure occupations for the psychosocially impaired person. The dynamics of group and individual participation in occupations will be explored as they relate to assessment and therapeutic intervention. 2 Cr. (1-3).

OCT 222
OT MANAGEMENT
Basic management and support tasks encountered in professional settings will be defined. Documentation techniques will be integrated to develop understanding of the dynamics behind departmental and health care facility functioning. The student will be exposed to topics associated with regulating agencies and quality assurance. The process of giving and receiving supervision will be explored. Students will gain experience in writing resumes and business letters. Job interviewing methods will be discussed and role-played. The importance of research and continued personal/professional development is stressed. 3 Cr. (2-0). *Prerequisite: OCT 120.*

OCT 250
LEVEL II FIELDWORK
A minimum of 12 weeks of supervised experience practicing the skills of an entry-level occupational therapy assistant. Students will be assigned to two settings where they will receive practical experience integrating and applying knowledge and skills to consumers of a variety of ages and conditions. 6 Cr. (0-18). *Prerequisite: Successful completion of all required course work of the Occupational Therapy Assistant curriculum together with the approval of the department.*

NOTE: Student is responsible for transportation, room and board.

OUTDOOR POWER EQUIPMENT (OPE)

OPE 710
SMALL ENGINE FUNDAMENTALS (8 weeks)
Introduction to basic tools and special tools of the trade. Covers engine identification, operation of two and four-cycle engines and the use of parts and service manuals. 5 Cr. (5-15).

OPE 711
DRIVE UNITS AND SYSTEMS (8 weeks)
Emphasizes lawn mowers, riding mowers and garden tractors. Covers general operation and maintenance procedures and drive systems, manual transmissions, hydrostatic units, differentials, angle drive units and hydraulic systems. 5 Cr. (5-15).

OPE 721
OPERATION, REPAIR AND MAINTENANCE (8 weeks)
Correct operation, maintenance and repair of chainsaws, snowmobiles, motorcycles and outboard engines. 5 Cr. (5-15).

OPE 722
SHOP OPERATION AND CUSTOMER RELATIONS (8 weeks)
Emphasizes personal appearance, conduct, attitude and employee-employer relations. Includes general shop operation, bookkeeping, inventory control, writing shop repair orders, warranty procedures and customer relations. 5 Cr. (5-15).

PHILOSOPHY (PHL)

PHL 111
INTRODUCTION TO PHILOSOPHICAL ANALYSIS
Investigation of major concerns of philosophy: Meaning and Truth, Perception and External World; God, Mind and Body. 3 Cr. (3-0).

PHL 121
ETHICS AND POLITICAL PHILOSOPHY
Students analyze the value systems and political/social theories that shape thought and reality in society. Students examine contemporary ethical problems and the forces which reshape values and political ideas. 3 Cr. (3-0).

PHL 250
PHILOSOPHY, SPORTS, GAMES, PHYSICAL EXERTION
Considerations of the nature of humans and the world through the study of the interplay of mind and matter in sports, games, and physical exertion. Special emphasis on stress in physical exertion and its effects on consciousness. Applications to morality, psychology, religion, social organization. Latitude given to the pursuit of individual and group interests. Involvement by those able in physically exerting activity, such as running, swimming, cross-country skiing, weight-lifting, etc. 3 Cr. (3-0).

PHYSICS (PHS)

PHS 100
PHYSICS—MECHANICS
Lecture, demonstrations. Problem-solving course in elementary mechanics; basic concepts of scientific method; the metric systems; vectors, translatory motion; rotary motion, work, power, energy; physical properties of liquids, solids, gases. Suitable for associate degree students in technology programs. 4 Cr. (3-3). *Prerequisites: MTH 103 or equivalent. MTH 104 background is desirable and we recommend it be taken prior to or concurrent with PHS 100.*

PHS 101
PHYSICS—HEAT AND LIGHT
Basic principles of heat and its measurements: thermometry, calorimetry, expansion of liquids, solids, and gases, transfer of heat. Light includes refraction, illumination, optics and color. Suitable for associate degree students in technology programs. 4 Cr. (3-3). *Prerequisite: MTH 103 or equivalent. PHS 100 is recommended.*

PHS 102
PHYSICS—ELECTRICITY AND MAGNETISM
Fundamental concepts of electrostatics, electrolysis; AC and DC circuits, magnetism; electromagnetic induction. Basic principles of electricity. Suitable for associate degree students in technology programs. 4 Cr. (4-0). *Prerequisite: PHS 100.*

PHS 106
INTRODUCTION TO METALLURGY
Introduction to physical metallurgy; chemical composition, crystallization. Effects of mechanical treatment: drawing, rolling, shaping; thermal or heat treatment. 4 Cr. (4-0). *Prerequisite: None, PHS 100 is recommended.*

PHS 112
INTRODUCTORY PHYSICS
Fundamental laws and properties of matter, mechanics, heat and light. Emphasizes electricity and magnetism. Introductory course for students taking PHS 122 and an appropriate lab science for non-science majors intending to transfer to a four-year institution. 4 Cr. (3-3). *Prerequisite: High school algebra.*

PHS 115
COLLEGE PHYSICS I
Lecture, demonstration and laboratory course involving some theoretical work but with emphasis on problem solving in elementary mechanics and thermal physics. Topics include: metric system, vectors, motion, Newton's Laws, energy, momentum, properties of matter, heat, the Laws of Thermodynamics and waves. Calculus will not be used. 4 Cr. (3-3). *Prerequisites: MTH 104 or equivalent and one year of high school science. Exceptional students may take MTH 104 as a corequisite.*

PHS 116
GENERAL PHYSICS I
Principles of mechanics and heat. Calculus is used when it leads to a more direct solution of problems. For science and engineering majors. 4 Cr. (3-3). *Corequisite: MTH 238.*

PHS 122
RADIATION PHYSICS
The fundamentals of electrical and radiation physics and the principles underlying the operation of x-ray equipment and auxiliary devices. 3 Cr. (3-0). *Prerequisite: PHS 112.*

PHS 125
COLLEGE PHYSICS II
Lecture, demonstration and laboratory course involving some theoretical work but with emphasis on problem solving in electricity, magnetism and light. Topics include: electric and magnetic fields, induction, direct and alternating current, electrical instruments, electromagnetic waves, optics and (time permitting) the basics of modern physics. Calculus will not be used. 4 Cr. (3-3). *Prerequisite: PHS 115.*

PHS 126
GENERAL PHYSICS II
Continuation of PHS 116. Principles of electricity, magnetism, wave motion, optics and sound. For science and engineering majors. 4 Cr. (3-3). *Prerequisite: PHS 116. Corequisite: MTH 248.*

PHS 202
MECHANICS
Intermediate course in kinematics and dynamics. Differential and integral calculus are used extensively in derivations and problems. 4 Cr. (3-3). *Prerequisites: PHS 126 and MTH 248.*

PHS 236
MODERN PHYSICS
Atomic and nuclear physics. Includes structures of atom and nucleus, radioactivity; fission and fusion; relativity; and the periodic table of elements. 4 Cr. (3-3). *Prerequisites: PHS 126 and MTH 248.*

PHS 500
PHYSICS SURVEY
Covers most of the following topics—selected to meet the needs of the majority of students in any particular section—matter and measurement; behavior of solids, liquids, and gases; mechanics, including forces, motion, energy, power, and machines; heat; sound; light; optics; magnetism; electricity; atomic phenomena. 3 Cr. (3-0). *Prerequisite: MTH 710 or equivalent.*

PLUMBING AND HEATING (PLH)

PLH 254
PLUMBING FOR THE TRADES
Theory and laboratory assignments in basic plumbing. The technical aspects of residential water and drainage systems, materials, fixtures, tools and equipment and job safety. Methods and techniques of applying plumbing skills in the trade areas. 2 Cr. (1-3).

PLH 711
BASIC PLUMBING (First 8 weeks)
Correct use of hand and power tools used in the plumbing trade. Methods of joining various types of pipe used in plumbing systems. Provides working knowledge of drain-waste-vent systems recognized by the National Standard Plumbing Code. 6 Cr. (6-18).

PLH 712
ADVANCED PLUMBING SKILLS (Second 8 weeks)
Installation and repair of potable water systems used in residential construction. Identifying components of residential plumbing fixtures. Instruction in the installation and repair of water heaters, kitchen and bathroom fixtures and well pumps. Covers the National Plumbing Code as it relates to residential potable water and drainage systems. 6 Cr. (6-18). *Prerequisite: PLH 711.*

PLH 721
PLUMBING SYSTEMS AND BLUEPRINTS (First 8 weeks)
Introduction to commercial blueprint reading and isometric pipe sketching. Material estimates and ordering. Installation and repair of commercial fixtures; design and construction of cooperative group projects; specialty plumbing includes systems for hospitals and handicapped. 6 Cr. (6-18). *Prerequisite: PLH 712.*

PLH 722
ADVANCED SYSTEM AND CODES (Second 8 weeks)
Introduction to commercial blueprint reading and isometric pipe welding sketching; material estimates and ordering; installation and repair of residential fixtures; design and construction of individual projects. 6 Cr. (6-18). *Prerequisite: PLH 712.*

PLH 832
HOT WATER - HEAT CONSERVATION (Second 8 weeks)
Basic skills needed to lay out, size and install various hydronic hot water systems and hot air for residential and commercial installation. Gas, oil, coal, wood, and combination fuel fired systems. 6 Cr. (6-18). *Prerequisite: PLH 833.*

PLH 833
HEAT LOSS CALCULATIONS - PIPE WELDING (First 8 weeks)
Basic skills required to calculate heat loss for residential and commercial installation; energy conservation. Practice in calculating, designing, and laying out hot water heating systems. Introduction to acetylene welding, cutting and electric arc pipe welding. Short unit on lead repair work. 7 Cr. (8-16). *Prerequisite: PLH 722.*

PLH 841
STEAM HEAT AND PIPEFITTING (First 8 weeks)
Basic skills needed to lay out, size and install residential and commercial steam heat systems, boilers and trim. Emphasizes combustion efficiency testing and oil burner service and repairs. Practical experience stresses advanced piping. 6 Cr. (6-18). *Prerequisites: PLH 832, PLH 833.*

PLH 842
FIELD WORK AND ADVANCED SKILLS (Second 8 weeks)
On-the-job work experience using trade skills acquired in previous courses. Emphasizes layout, roughing-in, and finish operations. Coordination among the trades, cooperation and on-the-job attitudes are stressed. Depending on job commitments, course may include instruction in such related skills as sheet metal, overhead welding and alternate heat sources. This course may be completed on a Cooperative Education basis. 6 Cr. (6-18). *Prerequisites: PLH 711, PLH 712, PLH 721, PLH 722, PLH 832, PLH 833, PLH 841.*

POLITICAL SCIENCE (PSC)

PSC 210
INTERNATIONAL RELATIONS
An examination of global politics through an analysis of the distinctions among modern nation-states and the influences governing their international relations. Topics include: Foreign Policy; Nationalism; Ideology; International Law; The Nature of Power; International Trade and Exchange; and The Future World Order. Special emphasis is given to changing political alignments and the present economic shift of forces from the industrialized Northern Hemisphere to the resource-rich Southern Hemisphere. 3 Cr. (3-0).

PSC 231
AMERICAN GOVERNMENT—NATIONAL
Federal government, its powers and organization. Functions of legislative, executive and judicial branches. Students examine the historical development of our federal system and analyze the relationships between social forces, government and political action. 3 Cr. (3-0).

PSC 241
STATE AND LOCAL GOVERNMENT
State and local government institutions, their functions and responsibilities; intergovernmental relations. 3 Cr. (3-0).

PSC 290
SPECIAL STUDIES IN GOVERNMENT
Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission of permission by the instructor. 1-3 Cr. (1 to 3-0).

PRACTICAL NURSING

NUR 101
FUNDAMENTALS OF NURSING
A basic course providing an orientation to the practical nursing program. Includes philosophy, objectives and responsibilities of the student nurse; the learning process, communication skills, basic nursing knowledge, legal and ethical aspects of nursing and skills common to all areas of nursing practice. Emphasizes the basic needs of clients of all ages including: physical hygiene, comfort, rest, nutrition, safety, developmental needs and concepts of sepsis and asepsis. The process of developing, implementing and evaluating care plans is introduced. Math for pharmacology is introduced. 12 Cr. (8-12).

NUR 201
NURSING CARE OF ADULT AND CHILD I
The study of the nursing care of adults and children continues the basic medical-surgical concepts studied in NUR 101. Focuses on an introduction to the disease process as it affects the individual throughout the life span. The student is expected to function progressively as a contributing member of the nursing team, and to develop and implement patient-centered care plans. Also covers the study of drug preparation and administration. 14 Cr. (8-18).

NUR 301
NURSING CARE OF ADULT AND CHILD II
A continuation of NUR 201. Covers advanced principles of nursing as related to the disease process. Also includes issues and trends in nursing, nursing and community organizations, and the role of the LPN in society. 16 Cr. (8-21).

PSYCHOLOGY (PSY)

PSY 111
GENERAL PSYCHOLOGY
Introduction to the science of human behavior and mental processes. Students examine the relation between the nervous system and behavior, learning, perception, language, personality, intelligence and psychopathology. 3 Cr. (3-0).

PSY 201
ABNORMAL PSYCHOLOGY
Principal forms of mental and emotional disorders with emphasis on their causes, symptoms, and courses of treatment. By examining distorted or exaggerated behavior, students develop a clearer sense of normal behavior. 3 Cr. (3-0). *Prerequisite: PSY 111 or permission of the instructor.*

PSY 203
DEVELOPMENTAL PSYCHOLOGY
Psychological development and change throughout the life span. Emphasizes principles of child and adolescent development, genetic and environmental influences on the course of physical, motor, intellectual, emotional, social, and personality development. 3 Cr. (3-0). *Prerequisite: PSY 111 or permission of the instructor.*

PSY 231
EDUCATIONAL PSYCHOLOGY
Psychological principles and concepts applied to learning. Students explore intelligence and intelligence testing, cognitive development, learning and memory, creativity, language and other relevant topics. These are applied to practical educational problems. 3 Cr. (3-0). *PSY 111 is recommended as a prerequisite.*

PSY 241
SOCIAL PSYCHOLOGY
Interaction of individuals in groups. Harmony and conflict within groups as well as between groups, group leadership and group controls, phenomena of imitation and suggestion. 3 Cr. (3-0). *Prerequisite: Permission of the instructor.*

PSY 290
SPECIAL STUDIES IN PSYCHOLOGY
Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. 1-3 Cr. (1 to 3-0).

QUANTITY FOODS (QFP)

QFP 510
INTRODUCTION TO FOOD SERVICE (8 weeks)
Covers essential elements of personal hygiene, sanitation and safety. Includes the use of small equipment and the use and care of commercial food production equipment. 3 Cr. (1-2).

QFP 511
SALADS, SOUPS, AND SANDWICH PREPARATION (8 weeks)
Covers the preparation of beverages, salads, sandwiches, soups and entrees using eggs and cheese. 4 Cr. (1-3).

QFP 520
MANAGEMENT AND PRODUCTION TECHNIQUES (8 weeks)
Provides a comparison of careers in fast foods and those in fine dining establishments. Advanced studies in sanitation and safety and the application of nutritional information in food preparation. 3 Cr. (1-2).

QFP 521
DESSERTS, SAUCES AND MEAT PREPARATION (8 weeks)
Covers the preparation of desserts, buffet items and sauces. Includes skills in bake shop and cafeteria operations. 4 Cr. (1-3).

QFP 530
TECHNIQUES OF FOOD PRODUCTION (8 weeks)
An orientation to careers in food service. Students develop competencies in nutrition, table setting and recording tips. 3 Cr. (1-2).

QFP 531
STARCHES AND ENTREE PRODUCTION (8 weeks)
Covers the preparation of vegetables, potatoes, pasta, rice, meats and poultry. 4 Cr. (1-3).

QFP 540
ADVANCED TECHNIQUES OF FOOD PRODUCTION AND SERVICES (8 weeks)
Covers job applications, cost controls, record keeping and procedures for food purchasing and storage. 3 Cr. (1-2).

QFP 541
SHORT ORDER PREPARATION (8 weeks)
Provides competencies in food service management for cooks. 4 Cr. (1-3).

RADIOGRAPHY (RAD)

RAD 110
RADIOGRAPHY I
Basic concepts of ethical principles and medical structure. Chemical aspects of processing a radiographic film and efficient darkroom (processing) procedures. Theoretical and practical instruction in the radiographic positioning of body structure and organs. Manipulation of exposure factors pertaining to milliamperage, kilovolts, distance, and time. Discussion of basic radiation protection. 5 Cr. (3-13).

RAD 120
RADIOGRAPHY II
Theory of x-ray technique. Necessity of different radiographic views to avoid superimposition of structure. The involvement of contrast media in relation to reactions, and contraindications to these media. Introduces the operating suite in relation to medical aseptic technique and radiographic procedures. Emphasizes nursing procedures as they relate to radiology. 7 Cr. (4-16). *Prerequisite: RAD 110.*

RAD 201/202
SUMMER INTERNSHIPS
Required internships establish eligibility for registry examination. Internships are arranged with affiliated hospitals. 1 Cr. each.

RAD 230
RADIOGRAPHY III
Students create a working combination—or establish a new combination—of exposure factors using x-ray components to produce an interpretive film. Advanced positioning of special radiographic views to demonstrate various anatomical parts. Emphasizes technical special radiographic procedures and quality control applications. Theory of radiation physics and protection. 10 Cr. (5-15). *Prerequisite: RAD 120.*

RAD 240
RADIOGRAPHY IV
Emphasizes basic concepts of diseases and their effects on the human body. Continued advanced radiographic positioning instruction. Theoretical instruction in magnetic reasonance, digital and CT scanning. Concepts of computer literacy will also be discussed. Basic concepts of scientific research. 10 Cr. (5-15). *Prerequisite: RAD 230.*

REAL ESTATE (RES)

RES 112
REAL ESTATE FUNDAMENTALS
This course is an introduction to the field of real estate. It emphasizes the legal aspects of real property ownership and lease arrangements and the instruments commonly used in property transactions. The functions performed by both the real estate broker and the salesperson and the procedures used are included. Real estate law, as it pertains to real estate transactions and the licensing law, is covered. This course can be applied toward the salesperson's license. 3 Cr. (3-0).

RES 113
REAL ESTATE LAW
This course covers the legal aspects of buying, selling, and holding real estate. This course can be used for the salesperson's license. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 114
REAL ESTATE APPRAISAL
Elementary principles and practices of appraising residential real estate, with in-depth study of the three approaches used to arrive at estimated value. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 115
REAL ESTATE PRACTICE
The purpose of this course is to help students develop and learn to apply the skills needed to sell real estate. Students taking this class will learn a great deal about interpersonal relationships—how people act, react, and interact with each other. Students will also be required to practice (in the classroom) the skills they learn. Emphasizes the practical aspects of selling—how to fill out a contract—and less tangible aspects—how to go about getting buyers and sellers to the stage where they are willing to fill out a contract. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 116
REAL ESTATE FINANCING
This course will prepare the average real estate salesperson to put together a money package to successfully close a deal. The course will also acquaint students with sources of funds available and the methods and regulations involved in purchasing, selling, or acting as an agent to sell real estate. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 117
REAL ESTATE MANAGEMENT
This course introduces the student to the basic managerial theories and strategies related to the real estate field. This course can be used for the real estate broker's license. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 119
REAL ESTATE MATH
This course covers the basic mathematics used by real estate professionals. Course credits can be applied only toward the broker's license. However, the subject matter covered is ideal as a review for individuals taking the salesperson's exam. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 120
REAL ESTATE TAXES
This course will emphasize the basic tax structure in our economy as it relates to the real estate field. This course can be used for the salesperson's and broker's license. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

RES 212
REAL ESTATE PRINCIPLES
This course is a more advanced in-depth study of the principles of financing, transferring property, contracts and various types of ownership as they relate to real estate. This course can be used for both the salesperson's and broker's license. 3 Cr. (3-0). *Prerequisite: RES 112 or Division permission.*

See page 87 for information on the Real Estate sale's and broker's examinations.

RETAIL MANAGEMENT (MKT)

MKT 233
RETAIL PRINCIPLES
Designed to familiarize students with the field of retailing. Provides the technical and theoretical knowledge necessary for retail management jobs. 3 Cr. (3-0).

MKT 240
MARKETING
This course illustrates various methods of merchandising and the channel of distribution from producer or manufacturer to the consumer. Government regulations, pricing, cost and branding, influence of buyers and consumers on marketing programs and current marketing trends are presented. 3 Cr. (3-0).

MKT 243
SALES
Examines the positive role personal selling plays in the American economy and documents the extent to which "sales" has aided in our economic growth. This course is designed to show the role of selling in helping customers recognize and satisfy wants and needs and explains how this satisfaction can lead to a higher standard of living. 3 Cr. (3-0).

MKT 245
FASHION MERCHANDISING AND DISPLAY
Designed to familiarize students with the field of retail merchandising. Provides the technical and theoretical knowledge necessary for retail management. Includes three laboratory hours per week during which students work on window displays and a fashion show. 4 Cr. (3-3).

MKT 247
RETAIL MANAGEMENT
Continues to build students' knowledge of the activities needed to make a retail business succeed. Emphasizes quantitative analysis of management problems and information systems through electronic data processing. Retailing is studied from the viewpoint of a middle manager in a larger retail firm and as it applies to owners of retail establishments. 3 Cr. (3-0).

SECRETARIAL OFFICE ADMINISTRATION (CLS, SEC)

CLS 718
CLERICAL OFFICE PROCEDURES
Students develop the skills needed to work in a wide range of office positions. Covers basic office duties, including handling the mail, office communications, filing, reprographics (duplicating), performing financial tasks, and meeting the public. Students also develop skills in such practical tasks as typewriting, proofreading, spelling, vocabulary, and handling correspondence. The course is designed to contribute to the student's understanding of the nature of the office and its importance in the business world. 5 Cr. (4-3).

CLS 726
MICROTRANSCRIPTION
Emphasizes effective transcription of machine-recorded information using mircrocomputer equipment. Covers equipment, efficient techniques and procedures, proofreading skills, and effective dictation. 3 Cr. (3-0). *Prerequisites: SEC 111, CLS 718, CSC 104.*

CLS 729
CLERICAL OFFICE WORKSHOP
Experience with practical problems and job-like assignments in simulated office situations give students realistic practice in meeting job demands. Develops skills in payroll procedures and office machines, plus the supplemental skills needed to meet office responsibilities. 3 Cr. (2-3). *Prerequisites: SEC 111, CLS 718.*

SEC 105
KEYBOARDING
This course is designed to help the student develop the ability to use the standard keyboard, regardless of the device for which the skill is acquired. Touch typewriting, speed and accuracy, numeric pad, data entry, and rediments of business communications are included. 1 Cr. (0-3).

SEC 111
TYPEWRITING I
Develops basic typing skills. Includes introduction to the typewriter; development of touch typewriting; development of speed and accuracy; introduction to business letters, memos, and tabulations; development of proper attitudes. Taught in the Individualized Learning Center, which permits the student to proceed at his/her own pace, moving from lesson to lesson as skills are mastered. 3 Cr. (2-3).

SEC 114
SHORTHAND I
Basic theory and techniques of Gregg Shorthand. Emphasizes outlines, proper techniques, and attainment of fluency in reading and writing shorthand. Dictation is given at 60+ words per minute for three minutes, to be transcribed with a 95+ percent level of accuracy. 3 Cr. (2-3).

SEC 121
TYPEWRITING II
Advances the student's ability in typewriting. Emphasizes production typing; tabulation; special skill techniques; advanced letter writing; forms, documents, and other routine typewriting duties. Taught in the Individualized Learning Center, which permits the student to proceed at his/her own pace, moving from lesson to lesson as skills are mastered. 3 Cr. (2-3). *Prerequisite: SEC 111. Students may also qualify by passing the appropriate test.*

SEC 124
SHORTHAND II
Continuation of SEC 114. Emphasizes the development of skills in taking dictation and transcription. Typewritten transcription is included. Dictation is given at 80+ words per minute for three minutes, to be transcribed with a 95+ percent level of accuracy. 3 Cr. (2-3). *Prerequisites: SEC 111 and SEC 114. Students may also qualify by passing the appropriate test.*

SEC 125
SECRETARIAL AND ADMINISTRATIVE PROCEDURES
Introduction to the responsibilities and the opportunities of the secretarial field. Emphasizes administrative aspects of secretarial work. Includes introduction to dictating and transcribing equipment, telecommunications, and the use of the microcomputer. 3 Cr. (2-3). *Prerequisite: SEC 111. Students may also qualify by passing the appropriate test.*

SEC 231
TYPEWRITING III
Designed for the typist with a sustained high level, accurate straight-copy speed. Provides an opportunity to master basic typing formats, to review and apply technical information, and to develop creativity and originality. Taught in the Individualized Learning Center, this course includes higher levels of typing—following directions, editing copy, composing letters, creating arrangements of tables—and other involved typewriting projects which the student will master at his/her own pace. 3 Cr. (2-3). *Prerequisite: SEC 121. Students may also qualify by passing the appropriate test.*

SEC 236
SPECIALIZED TERMINOLOGY AND TRANSCRIPTION
Intensive review of advanced Gregg Shorthand with emphasis on executive, legal, or medical vocabulary. Dictation is given at 100+ words per minute for three minutes, to be transcribed with a 95+ percent level of accuracy. Students are given intensive training in the transcription of letters and specialized forms. Emphasizes supplemental skills needed to meet secretarial responsibilities. 3 Cr. (2-3). *Prerequisites: SEC 121 and SEC 124.*

SEC 242
PROFESSIONAL INTERNSHIP
Practical experience through work assignments in specialized offices. 2 Cr. (0-6). *Prerequisites: SEC 121, SEC 124, and SEC 125.*

SEC 246
SECRETARIAL MICROTRANSCRIPTION
Integrates all phases of advanced dictation, transcription, and secretarial skills. Dictation is given at 100-120+ words per minute for three minutes, to be transcribed with a 98+ percent level of accuracy, using a microcomputer for transcription. 3 Cr. (2-3). *Prerequisite: SEC 236.*

SEC 247
SECRETARIAL OFFICE SIMULATION
Students work on an individual basis in completing specialized kits and dictation tapes which require the use of comprehensive secretarial training. 3 Cr. (2-3). *Prerequisite: SEC 236.*

SEC 509
TYPEWRITING
For non-business students. Includes touch typewriting, speed and control, familiarization with business letters, memos, reports, and personal typing. Taught in the Individualized Learning Center, which permits the student to proceed at his/her own pace, moving from lesson to lesson as skills are mastered. 1 Cr. (0-3).

SERVICE AND OPERATION OF HEAVY CONSTRUCTION EQUIPMENT (SOE)

SOE 713
SERVICE AND OPERATION I (8 weeks)
Introduction to heavy equipment mechanics. Begins with basic tools, micrometers and lifting equipment. Includes complete engine nomenclature (terms used to describe parts of the engine) and engine overhaul. 7 Cr. (7-18).

SOE 714
SERVICE AND OPERATION II (8 weeks)
Basic vehicle electrical systems. Includes electro-magnetism, ignition circuits, starting circuits, and electric troubleshooting. 7 Cr. (7-18).

SOE 725
SERVICE AND OPERATION III (8 weeks)
Introduction to the maintenance and repair of various types of clutches, gear type transmissions, and differentials. Maintenance of seals of anti-friction bearings. 7 Cr. (8-17).

SOE 726
SERVICE AND OPERATION IV (8 weeks)
Introduction to the maintenance and repair of final drives, undercarriages, tracks, and tires. Maintenance and repair of brake systems, 7 Cr. (8-17).

SOE 837
SERVICE AND OPERATION V (8 weeks)
Introduction to the various types of hydraulic systems used on heavy construction equipment. Includes pumps, motors, valves, cylinders, etc. 7 Cr. (8-17).

SOE 838
SERVICE AND OPERATION VI (8 weeks)
Introduction to the service, repair, testing, and troubleshooting of torque converters and power shift transmissions. Introduction to the hydrostatic transmission. Testing hydrostatic transmissions. Advanced electrical circuits and troubleshooting. 7 Cr. (8-17).

SOE 847
SERVICE AND OPERATION VII (8 weeks)
Introduction to basic construction surveying, construction blueprint reading, and grade stake reading. Operating various types of heavy construction equipment—dozers, loaders, motor graders, and scrapers. Service of machines operated. 6 Cr. (6-19).

SOE 848
SERVICE AND OPERATION VIII (8 weeks)
A continuation of SOE 847. Emphasizes developing skills as an equipment operator or mechanic. 6 Cr. (6-19).

SOCIOLOGY (SOC)

SOC 111
INTRODUCTION TO SOCIOLOGY
An introduction to the basic concepts and methods used in studying the group life of human beings. Students analyze forces which shape social practice and norms and explore alternative social practices. 3 Cr. (3-0).

SOC 112
GENERAL ANTHROPOLOGY
Survey of the physical and cultural evolution of humans and society. Emphasizes the relationship of the human physical structure to behavior and comparative descriptions of recent primitive societies. 3 Cr. (3-0).

SOC 231
MARRIAGE AND THE FAMILY
Examination of traditional and contemporary American marital and family relationships. Students examine expectations, roles, and values in various marriage and family patterns and explore forces promoting change. 3 Cr. (3-0).

SOC 241
URBAN SOCIOLOGY
The concept of community as it operates and affects individual and group behavior in rural, suburban, and urban settings. Emphasizes characteristic institutions and problems of modern city life. 3 Cr. (3-0). *Prerequisite: SOC 111.*

SOC 242
CRIMINOLOGY
The social relationships and situations involved in the cases and prevention of crime and juvenile delinquency. Particular emphasis on the functioning of the U.S. criminal justice system. 3 Cr. (3-0). *Prerequisite: SOC 111.*

SOC 290
SPECIAL STUDIES IN SOCIOLOGY
Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. 1-3 Cr. (1 to 3-0)).

SPANISH (SPA)

SPA 111
BEGINNING SPANISH I
Basic grammar and language structure. Comprehension, speaking and reading. Emphasizes pronunciation and accent. 3 Cr. (3-0).

SPA 121
BEGINNING SPANISH II
Continuation of SPA 111. 3 Cr. (3-0). *Prerequisite: SPA 111.*

SURGICAL TECHNOLOGY (SRT)

SRT 110
PRINCIPLES OF SURGICAL TECHNOLOGY I
A study of the surgical process including aspects of the operating room environment; patient care and the practice of surgery; medications used during surgery; pre, intra and post-operative techniques of surgery; micro-organisms and how they affect the human body; the physical, spiritual, psychological needs and medico-legal rights of the patient. 12 Cr. (9-9).

SRT 120
PRINCIPLES OF SURGICAL TECHNOLOGY II
An in-depth study of the various surgical specialties and associated surgical procedures. Anatomy and physiology and the disease conditions of the body will be reviewed. 4 Cr. (4-0). *Prerequisites: SRT 110, BIO 110, MTR 101.*

SRT 121
CLINICAL SURGICAL TECHNOLOGY
Application of lecture and laboratory materials in the hospital surgical suite to gain practical experience in general and specialty surgical procedures. In-depth study in procedures, instrumentation and equipment. 10 Cr. (2-24). *Prerequisites: SRT 110, BIO 110, MTR 101.*

SRT 122
DEPARTMENT OPERATING TECHNIQUES
A hands-on course covering fundamental equipment operations used in a surgical department. Develops basic skills in the use of such equipment as autoclaves, ultrasonics, hypo-hyperthemia, washer sterilizers and endoscopy equipment. Emphasizes safe work habits. 3 Cr. (2-3). *Prerequisites: SRT 110, BIO 110, MTR 101.*

TOOL DESIGN TECHNOLOGY (TDT)

TDT 231
TOOL DRAFTING (8 weeks)
Transition between mechanical drafting and tool design; drawings, techniques; purchased parts; standards of shop drawings; material lists; designing cutting tools. 4 Cr. (4-12). *Prerequisite: EDT 101 or EDT 111.*

TDT 232
FIXTURE DESIGN (8 weeks)
Designing leaf and tumble jigs, plain and index milling fixtures, vise jaws, chuck jaws, lathe fixtures, and adaptor plates. 4 Cr. (4-12). *Prerequisite: TDT 231.*

TDT 241
GAGE DESIGN AND PROGRAMMING (8 weeks)
Writing programs for computerized numerical control machines. Design of plug, snap, ring, flush pin depth, length, and indicating gages. 4 Cr. (4-12). *Prerequisite: EDT 101 or EDT 111.*

TDT 242
DIE DESIGN (8 weeks)
Designing cutting, forming, drawing, and cavity dies; simple, progressive and compound arrangements. 4 Cr. (4-12). *Prerequisite: EDT 101 or EDT 111.*

TOOLMAKING TECHNOLOGY
See MACHINIST GENERAL (MTT)

WELDING (WEL)

WEL 100
INTRODUCTION TO WELDING PROCESSES
Designed to give the non-welding major basic competencies in the four main welding processes used in industry today: shielded metal arc welding; oxy-acetylene welding and cutting; gas tungsten arc welding and gas metal arc welding. 3 Cr. (3-2).

WEL 701
ACETYLENE WELDING
Basic acetylene welding for plumbing students. 2 Cr. (0-5).

WEL 703
ELECTRIC WELDING
Selected units in basic electric welding for plumbing students. 2 Cr. (0-6).

WEL 712
ACETYLENE WELDING
Theory and practice in welding sheet metal and mild steel plate; oxyacetylene cutting; pipe welding, welding and brazing ferrous and nonferrous metals; weld testing; shop safety. 13 Cr. (7-18).

WEL 722
ELECTRIC WELDING
Principles and applications of basic electric welding. The use of various types of electrodes for welding steel plate in all positions, pipe welding; cast iron welding, weld testing. 13 Cr. (7-13).

WEL 832
INERT GAS WELDING
Theories and practice in manual inert gas shield techniques (TIG) and in the short arc, high speed, semi-automatic, metallic arc process (MIG). 13 Cr. (7-18).

WEL 842
WELDING (ADVANCED)
Practical theory and application of weldments to meet specifications of AWS, API and ASME codes. All position welding of heavy plate and pipe; testing and weld specimens. 13 Cr. (7-13).

WORD PROCESSING (WDP)

WDP 121
WORD PROCESSING I
Training in entry-level word processing operations on various types of word processing equipment. Operation of stand-alone dedicated word processing machines using floppy disks, CRT screens, and a shared logic fixed-disk system, with output to ink-jet document printers, is covered. Training is also provided on microcomputers using word processing software packages. 3 Cr. (3-0). *Prerequisite: SEC 111 or SEC 509.*

WDP 231
MACHINE TRANSCRIPTION AND OFFICE PROCEDURES
Effective transcription of machine recorded information using word processing equipment is emphasized. Introduction to machine transcription is given on the Audio Visual Tutorial (AVT) System. Equipment, efficient techniques and procedures, proofreading skills and effective dictation are covered. Various office forms, mailing operations, filing, and operation of office equipment are also covered. 3 Cr. (2-3). *Prerequisite: WDP 121.*

WDP 232
WORD PROCESSING II
Further develops the skills and knowledge acquired in Word Processing I. Emphasizes advanced machine features, including communication, file manipulation and the interface between various word processing machines. Includes training on text-editing features of the computer. 3 Cr. (3-0). *Prerequisite: WDP 121.*

WDP 241
WORD PROCESSING III
Refines the student's operating, decision-making, and human relations skills to the levels required for employment. The most advanced features of text editing and file design are included. 3 Cr. (3-0). *Prerequisite: WDP 232.*

WDP 242
WORD PROCESSING INTERNSHIP
"Live" work experience on word processing equipment either at the College or in a cooperating business. Cooperative work experience (co-op) may be substituted. 3 Cr. (0-15). *Prerequisite: WDP 232.*

STUDENT SERVICES

Orientation

Prospective students participate in an orientation program designed to introduce them to the college community and its various services and activities. Students also schedule the appropriate academic courses for their first semester.

Advisement and Career Services Center

The Advisement and Career Services Center is located in Room 157, Learning Resources Center, adjacent to the Library. Advisement and Career Services houses a wide variety of occupational and educational information, including pamphlets, booklets, film strips and other career library resources. Staff members are available to work with individuals as they use these materials and to provide counseling for those who need assistance in career decision making. Other services include programs in resume writing, interview training, and job search strategies. The Advisement and Career Services Center is open to both students and non-students.

Staff are available to help students with personal, academic, and career problems. The staff (with assistance from special faculty advisors) also help all new students select courses.
Advisors: Each student is assigned an academic advisor. The advisor is usually an instructor in the student's program area. Students should discuss academic concerns or problems with their advisor.
Counselors: Counselors are available to aid students in resolving many types of problems. Such problems may involve social, emotional, vocational, and personal concerns. Any need or concern which is perceived by the student as important will be viewed in the same way by the counselor. Information shared with a counselor will be held in confidence.

College Transfer

The Advisement and Career Services Center also assists students who need advice about transferring to other educational institutions. We keep a complete file of college catalogs and have statistics on various programs into which our students have transferred.

Career Services

Career services are designed to aid the prospective graduate seeking employment information. The Advisement and Career Services Center maintains a file of full-time job opportunities as well as addresses of prospective employers. A library of company literature and applications is maintained in the office for students' use. Information on full and part-time job openings is also published regularly in *The SPOTLIGHT* (student newspaper).

The Advisement and Career Services Center schedules on-campus interviews for companies which come to the College to recruit prospective graduates. Companies recruiting on campus include a number of leading industries from across the country. On-campus recruitment usually takes place from September through December and from February through April. Information on these interviews is announced in *The SPOTLIGHT* and in the *New Week News*.

Career services seminars are held each semester, just prior to graduation, for prospective graduates. During these seminars sample letters of application and resumes are distributed. Students learn how to prepare for job interviews and receive information on employment trends in various parts of the country. During the seminars, students also provide information for their placement cards at the College.

Services for Special Needs Students

Many students are successful despite certain handicapping conditions. Advisement and Career Services staff coordinate all services for handicapped students. Students who need such services as special tutors, oral testing, tape recorders, note takers, mobility assistants, etc. are asked to contact the Center in Room 157 of the Learning Resources Center before they enroll in classes so that any special arrangements can be made.

CAMPUS LIFE

The College's activities program will give you the chance to meet other students, faculty and staff in a friendly, relaxed environment. These activities also provide opportunities to gain leadership skills and to pursue special interests. Information on events and activities is announced in *The Spotlight* and in *New Week News,* on WWAS and on the College bulletin boards.

Intramural Athletics Sports Program

The College offers a well-balanced intramural athletics program. The program includes team and individual sports and gives students the opportunity to participate in both competitive and non-competitive activities. The intramural athletics sports program consists of the following activities: badminton, basketball, flag football, soccer, softball, table tennis, volleyball, weightlifting/training, wrestling, European team handball, pickle ball, two-on-two volleyball, and the Race Across the States. Anyone participating in intramural athletics does so at his/her own risk.

Student Organizations

New student clubs and organizations are constantly being formed. The following clubs are currently recognized:

Agribusiness Club
Alpha Omega Fellowship
Alumni Association
Artists Unlimited
Biology Club
Circle K
Civil Engineering Technology Club
Communications Club
Computer Science Club
Delta Phi Omega (Electronics)
Food & Hospitality Student Management Organization
Forestry Technician Association
Gamma Epsilon Tau (Graphic Arts)
Horticulture Technicians Association
Multi-Cultural Society
Northcentral Pennsylvania Chapter of the Construction Specifications Institute (Architectural)
Phi Beta Lambda (Business)
Service and Operation of Heavy Equipment Association
Sigma Pi Omega (Service organization)
Ski Club
SPOTLIGHT Staff (Student newspaper)
Student American Dental Hygienists Association
Student Government Association
Student Nurses of The Williamsport Area Community College (SNOW)
Student Society of Manufacturing and Engineering

College Colors and Nickname

The College colors, gold and burgundy, and the nickname, Wildcats, were selected by popular vote of the students.

Publications

The SPOTLIGHT, the College's student newspaper, is published at regular intervals throughout the College year by students.

The *Student Handbook* provides information on student events, regulations, and student services.

New Week News is a newsletter issued several times weekly which keeps the student body and faculty informed on current issues, announcements, programs, and activities that affect the College.

Social/Cultural/Recreational Activities

As a student you'll have opportunities to participate in a variety of activities sponsored by the College. These include:

— The Student Government Association provides a variety of educational and social activities throughout the year, including leadership training, dances, movies and coffee houses.

— The Special Events Committee offers cultural and special programs designed to appeal to students, staff and the community. Programs range from lectures and theater to the annual Bluegrass Festival.

— The Office of the Coordinator of College Activities schedules lectures, special activities related to College programs and courses, and recreational and intramural activities.

— Student organizations sponsor special activities and service projects throughout the year.

Student Government

Participation in the Student Government Association offers students the opportunity to develop leadership skills while contributing to the well-being of the College and the student body. In addition the Student Government Association offers a number of services for students.

The goals of the Student Government Association are:

1. To advocate student needs and represent the student body in matters related to College policy and activities.
2. To promote opportunities for the educational, personal, social and cultural enrichment and growth of all students.
3. To demonstrate concern for educational quality and physical safety in the College's instructional programs.
4. To advocate effective communication among all levels of the College community.
5. To promote the College's reputation and encourage respect for the College's environment.

The SGA office is located in Room A-138 of the Lifelong Education Center (ext. 248). Students interested in participating in SGA should contact an SGA officer, their curriculum advisor or the Coordinator of College Activities in Room 108 of the Gymnasium.

ACADEMIC INFORMATION

Classification of Students

Full-Time: A full-time student is one who carries 12 or more credits. Sixteen hours of lecture/demonstration, or 48 hours of shop/lab, equal one credit.

Part-Time: A degree or certificate candidate who carries fewer than 12 credits per semester is enrolled as a part-time student.

Non-Degree: A non-degree student is one who is not enrolled in a degree or certificate program. Non-degree students can select courses without regard to degree or certificate requirements. Non-degree students are not eligible for financial aid. They are permitted to schedule classes on a first-come, first-served basis (after currently enrolled students have been given the opportunity to schedule classes). Non-degree students must complete an "Admissions Application" form the first time they schedule classes, but are not required to pay the application fee.

Special Student: A handicapped student who cannot meet some of the requirements in certain shop programs is awarded a special certificate. It is not awarded to a student who may have failed to meet the requirements of a certificate program. Students must notify the College—PRIOR TO BEGINNING A PROGRAM—if they want to complete only part of the program and earn a special certificate. Exceptions will be made only for a student who becomes handicapped while enrolled in a certificate program.

Students age 18 or older who do not have a high school diploma or the equivalent may also be classified as "special students.".

Satisfactory Progress: As long as a postsecondary student is officially enrolled and officially permitted to continue his/her studies toward a degree or certificate at the College, the student will be considered to be making satisfactory progress. Students receiving financial aid must meet additional criteria as explained in the Financial Aid section of this catalog (page 10) in order to continue to be eligible to receive financial aid.

Scheduling/Registration

Because the number of students who can register for any class is limited, all students should schedule classes during the announced scheduling period. The

College strongly urges all students to complete their registration, including payment of all fees, before the announced day of Late Registration for each semester. On the day of Late Registration students may schedule classes on a first-come/first-served basis. The College does not guarantee any student the right to register after Late Registration day.

Credit Load

The academic year is divided into two semesters of approximately 16 weeks each. The normal full-time load per semester is 12 to 18 credit-hours. Students should allow an average of at least two hours preparation for each credit-hour of course work.

There are two sessions of varying length offered during the summer (May-August). For purposes of enrollment verification a student is considered to be enrolled full-time during the summer if his/her credit load totals 12 or more credits during both summer sessions.

Academic Overload

An academic/credit overload occurs when a student enrolls for more than 18 credits per semester (except for students in programs which require more than 18 credits per semester). In a summer session, an academic overload occurs when a student enrolls in more than 6 credits at the same time.

Students who want to schedule a credit overload must obtain permission from the Division Director of the program in which they are enrolled.

A student must have earned a 3.00 cumulative grade point average or a 3.00 average the previous semester in order to qualify to schedule a credit overload. Exceptions must be approved by the Dean of Academic Affairs or his/her designee.

Change of Course

After the official registration period is over, the student may make adjustments in his/her schedule through the process of adding and/or dropping courses.

Dropping a Course: A student may drop a credit course during the first three weeks—or the first 20 percent of instruction—of the term by having his/her advisor complete the appropriate section of a "Student Status Change" form. The instructor of the course being dropped and the advisor must sign the form. The course will not appear on the student's academic record. After the third week (or equivalent) the student must withdraw from the course. (See Terminations, Withdrawals and Refunds, page 132.)

Adding a Course: A student may add a course during the first week of classes (two days in Summer Term) by having his/her advisor complete and sign the appropriate portion of a "Student Status Change" form.

The approval of the appropriate Division Director and the Associate Dean must be obtained if a course is added after the first week of classes.

Developmental courses and any related course work required may be dropped or added until the end of the third week of classes.

The Dean of Academic Affairs or his/her designee may make exceptions in special circumstances.

Change of Program

A change of program may be made at the beginning of any semester. Currently enrolled students who wish to change from one program of study to another must follow the steps below.

1. Complete an "Admission Application" and submit it to the Admissions Office. Acceptance into the new program will be based on sponsorship status and on the date the applicant's file is complete in the Admissions Office.

2. Complete a "Curriculum/Program Change" form and obtain all required signatures. Submit the form to the Student Records Office.

When a student changes his/her program, all credits earned in the prior program will be evaluated for transfer to the new program. All courses will appear on the student's transcript. Only courses applicable to the new program will be used to calculate the student's new cumulative grade point average.

Repeating a "D" or "F" Course

Students may repeat a course in which they earned a grade of "D" or "F". However, they must improve the grade of the repeated course to affect their cumulative grade point average. If the student repeats the course at The Williamsport Area Community College and improves his/her grade, both grades will appear on the permanent record card with the higher grade used in calculating the cumulative grade point average. If the student repeats the equivalent course at another institution and transfers the course to the College (subject to Transfer Policy, see page 5), the original grade remains on the transcript but is not included in the semester or cumulative average. (The credits for the transferred course will not be used in calculating the student's cumulative grade point average.) If the student repeats a course and earns a second "D" or "F", the second grade and credits will not be used in calculating the cumulative grade point average.

Auditing a Course

Auditors are not required to prepare lessons or papers or take examinations, nor do they receive credit for the course. Students are charged full tuition for courses taken on an audit basis.

With the consent of the instructor and the Dean of Academic Affairs, a student may enroll as an auditor in any course.

Students must inform the Student Records Office that a course is being taken on an audit basis when they schedule. A student may not change from credit to audit status or from audit to credit status after the beginning of the semester.

Grading System

The College uses the following system of grading (4.00 basis) to indicate the quality of a student's work:

Grade	Interpretation	Grade Points
A	Superior	4
B	Above Average	3
C	Average	2
D	Below Average	1
F	Failing Work	0
W	Withdrawn	—
WP	Withdrawn Passing	—
WF	Withdrawn Failing	0
I	Incomplete	—
AU	Audit	—
SP	Satisfactory Progress	—

An instructor may assign an "I", Incomplete, grade to give a student additional time to complete required course work if the student has missed an exceptional number of classes due to accident, illness or other extenuating circumstances. An Incomplete will not be used to extend the time a student has to complete class requirements beyond the normal allotted time.

If a student is awarded a letter grade of "I", the instructor will submit an incomplete grade form with the student's grade roster. The form describes the work which must be completed and gives a deadline for completing the work. The deadline date will be before the end of the following semester. Copies of the incomplete grade form will be sent to the student and his/her advisor. A permanent "F" will be recorded if the work is not completed prior to the end of the following semester.

"SP", Satisfactory Progress, is used for certain students in Developmental Studies courses. "SP", Satisfactory Progress, will be awarded if students do not complete all course requirements but do meet the requirements for "SP" as established in the syllabus for a particular developmental course. Students earning an "SP" will reenroll in the same course. Upon mastery of all course objectives, the student will earn a traditional letter grade (in the semester in which the course requirements were met).

Grade Reports

At the midpoint of each fall and spring semester course a grade of "P" (Passing), "D" (Deficient), or "F" (Failing) is reported for each student officially registered in each course. Each grade is advisory only, indicating the quality of work up to that point in the semester. Mid-term advisory grades do not become part of the student's permanent record. Final semester grades will be mailed after the end of the semester or summer session. The grade report will show all course work completed to date by the student. Students should check the cumulative grade report for accuracy and to be certain they are meeting graduation requirements. To protect the confidentiality of the student's record and in compliance with federal law, *no grades will be given over the phone.*

Since the grade report is also an unofficial copy of their transcript, students may use their grade report when an unofficial transcript is required. (For information on obtaining official transcripts, see page 9).

Cumulative Grade Point Average

A student's cumulative grade point average is computed by dividing the number of grade points by the total number of credits for which the student has earned a grade of A, B, C, D, F, or WF. No other grades in the College's grading system are used in the calculation.

The cumulative grade point average includes: 1) Credit for Williamsport Area Community College courses completed by a student currently enrolled in a degree or certificate program; 2) Credit for Williamsport Area Community College courses previously completed by a student who reenrolls in the same program when such credits are appropriate for the new program; 3) Credit for Williamsport Area Community College courses previously completed by a student who reenrolls in a different program when such courses are appropriate for the new program; 4) Credit for Williamsport Area Community College courses previously completed by a student who changes to a different program when such credits are appropriate for the new program; 5) Credit earned through cross-registration with Lycoming College.

The cumulative grade point average does not include credits from the following: 1) CLEP exams; 2) Advanced Placement; 3) Credit by Exam; 4) Credit for Work/Life Experience; 5) U.S. Armed Forces Institute Credit and Service Credit; 6) Credit transferred to The Williamsport Area Community College from another institution; 7) Credits previously earned by a student who changes to a different Williamsport Area Community College program or who reenrolls in a program when such credit does not meet the current requirements for the new program; 8) Credits for courses in which the student

earned a "D" or "F" if the student repeats the course. If the student repeats the course at The Williamsport Area Community College and earns a higher grade, the higher grade will be used in calculating the cumulative grade point average. If the student repeats the equivalent course at another institution and transfers the course to The Williamsport Area Community College, the original grade remains on the transcript but is not included in the cumulative average. (The grade for the transferred course is not included in the cumulative grade point average.)

Withholding Grades

A student's grades and records will not be released if the student has any outstanding loans or fines (for example, parking fines or library fines) at the College or if the student has outstanding obligations to the College for the return/replacement of items such as books, tools or equipment. When a hold is placed on a student's grades, the student will be notified in writing of the hold and of the action needed to release his/her grades or records.

Advanced Placement Credit

The Williamsport Area Community College believes that placing students at the proper educational level will contribute to the student's success in College.

Advanced placement is designed to give students credit for the skills or competencies they have acquired prior to entering College. Students who have completed advanced courses in high school, in an area vocational technical school program, or as part of military training, and those with prior educational experiences may be eligible for advanced placement. We recommend that applications for advanced placement be submitted by March 15 for students who plan to enroll in the fall semester, by November 15 for students who plan to enroll in the spring semester, and by April 15 for students who plan to enroll in the summer semester.

Students from area vocational technical schools with which the College has Task Level Articulation Agreements can obtain advanced placement on the basis of an instructor-verified list of competencies. Such students must also take the College's reading, English and math placement tests as early as possible so that they can take developmental courses, if needed, in the summer before they begin their regular program.

New students will receive a schedule of advanced placement test offerings showing the date and times when tests will be given. The student should indicate which test(s) he/she wishes to take and return the form to the appropriate Division office.

A copy of the evaluation of the advanced placement test or other assessment will be sent to the student.

A fee of $25 per course will be charged when credit from advanced placement testing is entered on the transcript.* Credit earned through advanced placement will be shown on the student's transcript after the fee is paid and the student has successfully completed one semester at the College. Up to a maximum of 30 credits may be granted through non-traditional credit evaluation (advanced placement, credit by exam, and work/life experience). Advanced placement credit is not used in calculating the student's cumulative grade point average. Only the course number, title, and number of credits will be entered on the transcript. No letter grades will be shown.

*The $25 fee will not be charged for secondary students assessed externally and for certain developmental courses which are exempt.

Credit By Exam

Students may apply to take any College course by examination. In order to challenge a course by examination, a student must have completed at least 12 credits at The Williamsport Area Community College and have earned a grade point average of 2.00. Application to take a course by examination must be made in writing to the appropriate Division Director. Approval must then be given by the instructor(s) of the course involved and the Division Director. Students who decide to challenge a course after enrolling in it must arrange for testing to take place prior to the third week of instruction (or the equivalent).

If approval is granted, a fee of $25 must be paid at the Bursar's Office prior to each examination. No examination will be prepared or administered until the student presents the $25 receipt. The examination fee will be waived for students seeking credit for ENL 111 (English Composition I) or RDG 111 (College Reading, Reasoning and Study Skills) as a result of outstanding performance in the respective developmental counterpart, i.e., ENL 011 (Basic English) or RDG 010 (Reading Improvement).

The examination is prepared, administered (at the time set by the Division Director), and evaluated by the instructor(s) of the course. A copy of the result of the examination will be sent to the student. When a student passes the examination for the course, the course number, title, and number of credits only will be entered on the student's transcript. (No letter grades will be listed on the transcript.) A maximum of 30 credits may be earned through non-traditional credit evaluation (work and/or life experience, advanced placement, credit by exam). Credit by exam may not be used to remove a D, F, or WF grade. An examination in a specific subject may be taken only once. All exceptions to the above requirements must be approved by the Dean of Academic Affairs or his/her designee.

Credit for Work and/or Life Experience

The College recognizes that many individuals acquire rich academic and technical experiences through working and/or living in a particular situation. Students who have been accepted to the College and who feel their work or living experiences warrant consideration for academic credit should apply in writing to the Division Director responsible for the course(s) involved. The application must include evidence and rationale for granting credit.

The Division Director will appoint a committee to assess the candidate's educational and work background. The student will be asked to document his/her work and life experiences and to show that the experiences are equal to a course(s) offered at the College. The committee will also interview the student. The committee will recommend the number of credits to be awarded. A fee of $25 per course will be charged for the evaluation of credit.

A copy of the evaluation of work and/or life experience will be sent to the student. Credit earned through work/life experience will be shown on the student's transcript after he/she earns 12 credits at the College. Credit for work/life experience will not be used in calculating the student's cumulative grade point average. No letter grade will be listed on the student's transcript. Up to a maximum of 30 credits may be earned through non-traditional credit evaluation (work and/or life experience, advanced placement, credit by exam). All exceptions to the above requirements must be approved by the Dean of Academic Affairs or his/her designee.

Cooperative Education

Cooperative Education (co-op) offers students the opportunity to participate in supervised periods of relevant and meaningful employment. While on co-op assignment, students work as regular employees of the co-op employer, receive vocational counseling, and earn academic credit for knowledge and/or skills acquired from their work experience. Co-op may be used to replace or supplement required courses in most programs.

The following options are available to qualified students in most programs:

1. Alternating Plan: Students rotate periods of full-time work and full-time on-campus study.

2. Parallel Plan: Students work part time and attend regular classes during the same semester or summer session.

3. Summer Plan: Students work full time during a summer session followed by a parallel plan co-op during the following semesters.

4. Career Advancement Plan: Students attend college on a part-time basis while working either full or part time at their regular (not a "co-op") job. Designed for employed students.

5. APCO (Advanced Placement with the Co-op Option): Students who have completed a related vo-tech program receive advanced placement and are encouraged to participate in part or full-time co-op while attending college.

Variations of the above options are possible, depending upon job and College requirements. Co-op placements can range from eight weeks to a full semester or summer of 15-16 weeks.

In order to participate in Cooperative Education, a student must have successfully completed a minimum of one full semester (12 credits) or its equivalent and must maintain a cumulative average of 2.00 or better. (A 2.50 average in courses related to the student's program is recommended.)

The Dean of Academic Affairs or his/her designee may waive these requirements in the following situations:

1. If the College determines that the student has acquired competencies—through previous training and/or experience—which are equivalent to those provided during one full semester of instruction at the College.

2. When the student's cumulative average falls below the level required and/or recommended due to special circumstances.

A student who is unable to meet and maintain either the behavioral or performance standards established for co-op employment may, with just cause, be withdrawn from co-op employment by either the employer or the College.

A student may withdraw or be withdrawn from co-op employment without penalty if—for any well-founded reason—the work site is deemed to be unsafe or if the level of work assigned does not meet the learning objectives established by the student and the College.

Employer Participation

Employers who can provide full-time or part-time positions which meet the following qualifications are encouraged to participate in the co-op program:

1. The job must provide educational experiences in an area directly related to the student's course of study or career goals.

2. The job must provide learning experiences that will be meaningful and challenging for the student.

3. The job should be relatively secure in order to provide at least one or more full co-op work terms.

4. The employer will cooperate with the College and the student in developing specific learning objectives for each work period.

5. The employer will enter into a training agreement with the College and the student.

6. At the end of the work experience, the employer agrees to evaluate the student's performance and progress toward meeting specific learning objectives.

Specific information can be obtained directly from the student's academic division or by contacting:

Director of Experiential Learning
The Williamsport Area Community College
Room 157, Learning Resources Center
1005 West Third Street
Williamsport, PA 17701-5799
Phone (717) 326-3761, ext. 239

Cross-Registration with Lycoming College

The Williamsport Area Community College participates in a cross-registration program with Lycoming College. In order to cross-register for courses at Lycoming College, a Williamsport Area Community College student must obtain the permission of his/her advisor and division director, the Dean of Academic Affairs and the academic dean at Lycoming College. In order to participate in this program, students must:

1. be enrolled on a full-time basis in a degree or certificate program.
2. have completed at least 12 credits at The Williamsport Area Community College.
3. have completed no more than 70 credits, including transfer credit, cross-registration credit, and non-traditional credit.
4. have a current cumulative grade point average of 2.00 or better.

During the fall and spring semesters, students may register for two courses or one-half of their total semester credits (whichever is greater) through cross-registration. During any summer session, students participating in cross-registration must register for at least three credits at The Williamsport Area Community College and may register for only one cross-registration course.

Students may cross-register only for courses not offered at The Williamsport Area Community College or for courses unavailable before the student's scheduled date of graduation. Students participating in cross-registration will be responsible for paying any special laboratory fees or charges required for the course. Grades earned through participation in cross-registration will be recorded on the student's Williamsport Area Community College transcript. Courses completed with a passing grade ("D" or better) will be credited toward graduation. Grades earned in courses taken at Lycoming College will be included in the student's semester and cumulative average. Students who cross-register are responsible for complying with the academic calendar of the institution offering the course(s) they take. Cross-registration students should inform their advisors of any difficulties with, or plans to drop Lycoming College courses. Students may obtain additional information on cross-registration procedures from their advisors or the Student Records Office. All exceptions to the above requirements must be approved by the Dean of Academic Affairs or his/her designee.

Graduation Requirements

All entering students must exhibit competencies in the basic skills (reading, computation, and written expression) necessary for success in their programs. Students who have not demonstrated these competencies on the college placement tests are required to complete specific courses in order to earn a degree or certificate from The Williamsport Area Community College.

Associate Degree

The successful completion of a two-year program of study—identified as an Associate Degree program in this catalog—at The Williamsport Area Community College leads to an Associate of Applied Science, an Associate of Arts, or an Associate of Applied Arts Degree. To be eligible for an Associate Degree from The Williamsport Area Community College, the student is expected to satisfy the following:

a. Complete courses required in a specific program of study as set forth in this catalog. Students may substitute courses with prior written permission of the appropriate Division Director and the Dean of Academic Affairs. Only courses numbered 100, 200, 500 and 600 can be applied toward meeting graduation requirements for an associate degree. Only courses numbered 100-299 can be applied to the requirements for an associate degree in General Studies. Courses numbered 001-099, 500, 600, 700 and 800 cannot be used to meet associate degree graduation requirements.
b. Complete a minimum of 30 credits in courses offered by The Williamsport Area Community College. Credit earned by advanced placement, credit by examination, or work/life experience may be included in the 30-credit minimum. A student must be enrolled in courses at The Williamsport Area Community College for at least the last 12 credit hours of a program.
c. Earn at least a "C" average (2.00 cumulative grade point average) in all courses and complete all required courses with a grade of "D" or better.

d. Satisfy health and physical education requirements as stated in a student's curriculum. A student may receive a waiver from physical education based upon the following considerations:
   1. Age - A student must be 27 years of age or over in order to obtain a waiver.
   2. Military Service - The requirement may be waived if the student was on active duty in the Armed Services of the United States for a minimum of at least one year. (See page 6 for conditions and requirements.)
   3. Physical or Medical Reasons - The requirement may be waived because of physical or medical reasons. (Student must have a statement from a medical doctor stating explicitly the reason for the waiver.)
e. Fulfill all financial obligations to the College (including payment of any fines).

Certificates

Certificates will be awarded for the successful completion of a program of study identified as a Certificate program in this catalog. To be eligible for a Certificate from The Williamsport Area Community College, the student is expected to satisfy the following:

a. Complete a recommended program of study as set forth in this catalog. Students may substitute courses with prior written permission of the appropriate Division Director and the Dean of Academic Affairs. Only courses numbered 100 or above can be applied toward meeting graduation requirements. Courses numbered 001-099 cannot be used to meet graduation requirements.
b. Complete at least half of the credits required, including the last semester, in courses offered by the College. This includes credit received for advanced placement, credit by examination, or work/life experience. A student must be enrolled in courses at The Williamsport Area Community College for at least the last 12 credit hours of a program.
c. Earn at least a "C" average (2.00 cumulative grade point average) in all courses and complete all required courses with a grade of "D" or better.
d. Fulfill all financial obligations to the College (including payment of any fines).

Additional Information

If after completing the final semester, the student has not earned all the credits required for a degree or certificate, he/she may, with prior approval of the Dean of Academic Affairs or his/her designee be permitted to take up to six semester credit hours from another accredited college/institution to fulfill requirements for a degree or certificate from The Williamsport Area Community College. Such work must be completed within two years after the last semester in which the student attended classes at The Williamsport Area Community College. After two years, the student must reenroll at The Williamsport Area Community College. (See Reenrollment and Transfer Credit, pages 4 and 5.) Only grades of "C" or better are acceptable for such transfer credit. (Grades for transfer credits are not included in the student's cumulative grade point average.)

All exceptions to graduation requirements must be approved by the Dean of Academic Affairs or his/her designee.

Petition to Graduate: In order to graduate a student must report to the Student Records Office and complete a "Petition for Graduation" form during the first five weeks of classes of the semester in which the student intends to graduate. If this form is not submitted, the student's name will not appear on the Graduation Program. In addition, *the student's final transcript will state that the student is a "non-returning" student,* rather than a graduate.

Students who meet graduation requirements in the summer will graduate at the end of the second summer session.

Graduation Fees

Any students who wish to receive an engraved diploma or certificate when they graduate must pay a $5.00 fee when they petition to graduate. If a student orders a diploma or certificate after the advertised date for ordering a diploma (i.e., two months prior to the date of graduation), the student must pay a special processing fee of $10.00.

If a graduating student does not wish to receive an engraved certificate or diploma, he/she will not be charged the graduation fee but must still file a petition.

The Dean's Honor List

The honor list is announced by the Dean at the completion of each semester. The list will include only those full-time students who have a semester grade point average of 3.50 or better.

Terminations, Withdrawals and Refunds

Student Termination From College

If a student finds it necessary to terminate his/her enrollment at the College for any reason, the student must:

1. Officially withdraw from each course by completing the "Student Status Change" form.
2. If the student is also applying for a refund, the "Request for Refund" form must be filled out and submitted with the "Student Status Change" form.
3. Satisfactorily account for all property issued by the College.
4. Settle all outstanding College obligations.

Students who do not officially terminate from the College in the manner described above will receive the grade of "F" or "WF" in all courses.

College Termination

The College reserves the right to terminate enrollment of any student or to withhold the degree of any student, if, in the opinion of College authorities, his/her further association is not in the best interests of the student or the College. Specific situations in which the College may terminate a student include, but are not limited to:

1. Failure to meet financial obligations.
2. Failure to meet requirements or to complete objectives in a given program and/or course.
3. Failure to demonstrate safe practices.

Recommended procedures for appealing questions on academic evaluation are given in the *Student Handbook*.

Withdrawal/Termination From A Course

Student Withdrawal — After the official drop/add period for the term (the end of the third week or 20 percent of instruction) until the end of the tenth week, or equivalent, for each term, a student may withdraw from a College course with a grade of "W" (unless the student is withdrawn from the course by the College for absenteeism—in which case the student will receive a grade of "WF").

If a student withdraws from a course after the tenth week (or equivalent), the instructor, with the approval of the appropriate Division Director, will award a grade of "WP" or "WF." No credit is given for a "WP" grade. A "WF" grade affects the student's grade point average in the same manner as an "F". If a student stops attending a class without officially withdrawing from the course, the student will receive a grade of "WF" or "F." Students may withdraw from courses until the last day of classes.

Students must complete and submit a "Student Status Change" form to withdraw from a course.

College Initiated Termination — When an instructor determines that a student is not adequately meeting course objectives and has missed more than the equivalent of the class hours in one week of instruction, the instructor MAY recommend that the student be withdrawn from the class by the College. The College will withdraw a student from a course for excessive absences only after the first three weeks (or 20 percent of instruction). A grade of "WF" will be recorded on the student's transcript.

Refunds

Charges for tuition, activity fees and service fees are refundable upon official withdrawal/termination from the College. Application fees are not refundable. A "Request for Refund" form can be obtained from the Bursar's Office. In order to obtain a refund, the "Request for Refund" form and the necessary "Student Status Change" form(s) must be submitted at the same time.

Refunds of tuition and fees will be made according to the following schedule for fall and spring semesters:

Prior to the first day of classes	100% Refund
First day through third week	70% Refund
After third week of classes	No Refund

Refunds will be made according to the following schedule for the summer semesters and for courses that do not meet for the entire semester (for example, some weekend college classes and "mini-courses," eight-week courses, etc.).

Prior to the first day of classes	100% Refund
First day through 20% of total instructional hours	70% Refund
After 20% of total instructional hours	No Refund

Refunds or Added Payments for Dropping/Adding Courses

Dropping or adding courses can change the fees charged to a student. The following conditions will govern refunds or additional charges due to dropping or adding courses.

Drop/Adds which result in a reduction in total credits:

If completed prior to the third week of a course (20% of instructional hours)	100% per-credit refund based on decrease in total number of credits.
If completed after third week of a course (20% of instructional hours)	No refund for dropped course(s). Payment for dropped course(s) may not be transferred to any course being added. Dropping all courses is equivalent to a Withdrawal and is governed by the refund schedule for Withdrawals.

Drop/Adds which result in an increase in credit hours or in the same credit hours:

If completed prior to the third week of a course (20% of instructional hours)	100% per-credit charge based on increase in total number of credits. No special charge if same number of credits.

If completed after third week of a course (20% of instructional hours)	100% per-credit charge for any course(s) added. Payment for dropped course(s) may not be transferred to any course being added.

Student Conduct

On admission to The Williamsport Area Community College you accept unqualified commitment to conduct yourself at all times, both on and off the campus, in a responsible manner which conforms with the generally accepted standard of adult behavior. It is expected that you will show courtesy and respect for the administrative officers, faculty, and employees in your personal contacts. You must also understand and accept the necessity for various College regulations and comply with the directives of those authorized to enforce the regulations. If you conduct yourself in a manner contrary to the best interests of the College you will be subject to such penalties as the circumstances justify, including suspension or expulsion. Additional information regarding student conduct on campus and student judicial procedures is available in the *Student Handbook.* All students are expected to read and follow the policies in the handbook.

A student may be suspended or dismissed for improper conduct, failure to comply with College regulations, academic dishonesty, habitual absences, lack of effort and interest, possession of, or being under the influence of alcoholic beverages or illegal drugs, or under other circumstances as determined by the Board of Trustees.

If all cases where academic dishonesty is established, the student may be dropped from the course with a grade of "F". For a second offense, the student may be dismissed from the College. In a case involving a question of academic dishonesty, the professor in whose class the incident is alleged to have occurred will consult with the appropriate Division Director regarding disciplinary action.

Attendance Policy

1. Regular and prompt attendance at all classes and at scheduled conferences with instructors is expected of all students. All work missed because of absence, regardless of the cause, must be made up to the satisfaction of the instructor. Students who know that they will be absent are expected to get assignments from instructors in advance so that the necessary work will be completed before the student leaves, or immediately upon his/her return. This applies to absences for College activity trips as well as absences for other reasons. In all cases of anticipated absence, students should confer with their instructors in advance whenever possible.
2. All faculty are required to record attendance daily.
3. When a student, in the instructor's judgment, is not adequately meeting the course objectives and has missed *more than* the equivalent of the class hours held in one week of instruction, the instructor MAY recommend the student be withdrawn from class by the College.

If, in the judgment of the instructor, extenuating circumstances are involved (e.g., a death in the family, hospitalization, illness, or serious accident), the following alternatives are available to the student.

a. To arrange with the instructor's approval a stated plan for meeting course objectives and responsibilities. If completion of the approved plan extends beyond the semester, the student can receive an "I" grade (Incomplete).
b. Until the end of the tenth week, or equivalent, of each term, the student can withdraw and receive a "W" grade (Withdrawn).

4. Based upon the instructor's recommendation, a decision to withdraw a student from a course MAY be made by the appropriate Division Director. Withdrawal from a course by the College for excessive absences will only be done after the first three weeks of each term or 20 percent of instruction and will be recorded on the student's transcript as a "WF" (Withdrawn Failing).
5. Appeal Process: Students who are withdrawn from a course by the College may appeal the decision within three school days of notification.

   The student may appeal the decision to either the Dean of Academic Affairs OR the Ad Hoc Academic Policy Group consisting of the Dean of Academic Affairs, President of the Student Government Association, and Chairperson of the Academic Standards and Policy Committee.

Academic Probation

Any degree or certificate candidate whose cumulative grade point average is below 2.00 will be placed on academic probation. A student on probation may be required to report to the Advisement and Career Services Center for special counseling before registering for classes the following semester.

A student may be terminated from the College if his/her *cumulative* grade point average is under 1.50 at the end of the first semester's work, under 1.80 at the end of the second semester's work, or under 1.90 at the end of the third semester of work. (A semester's work is generally defined as the courses listed for a semester in a given program, or 15 credits of course work.) The Probation Committee will determine the semester status in special situations.

The Probation Committee meets at the end of each term. The Committee determines the conditions under which students with grade point averages below 2.00 will be permitted to continue at the College. The Committee may also terminate students. Students who are terminated may appeal the action to the Chairperson of the Probation Committee or his/her designee.

Final Examinations

Final examinations may be scheduled by instructors at the end of each semester. A student who is absent from a final examination without good reason is subject to a failing grade.

Developmental Studies Program

The open admissions policy of The Williamsport Area Community College permits most students to enroll in the programs of their choice. However, all entering students must exhibit competencies in the basic skills (reading, mathematics, and written expression) necessary for success in their programs. Students who have not demonstrated these skills on the college placement tests must take specific developmental courses before enrolling in other math and English courses required for a degree or certificate from The Williamsport Area Community College.

The College will award institutional credit for developmental studies courses (courses numbered 001-099) and the grades earned in those courses will be included in the student's grade point average. Three developmental courses—RDG 111, CHD 100, and CHD 101—carry elective credit and may be used to fulfill a general elective requirement. Developmental courses with institutional credit may not replace any course requirement or elective.

The Developmental Studies program is designed to serve a variety of students:

- those who lack academic skills and requirements for the curriculum of their choice
- the "non-traditional" student
- unemployed adults
- adults returning to school after a number of years of absence
- high school dropouts
- veterans
- those students referred to the program by instructors who recognize a need for one or more of the program's services
- those who require assistance and solicit the program services on a "walk-in" basis.

The program consists of courses in math, reading, English, personal development and decision-making. Students may enter the entire program or part of it as the result of counseling, placement tests, academic record, or personal choice. While in the program, most students will also take courses in their curriculum. One strength of the program is the frequent contact with staff who assist the student with course selection, problem solving, decision making, career planning.

Classwork is designed to promote a successful teaching-learning atmosphere. Varied learning strategies, individualized and self-paced instruction, small group sessions, tutorial and media support are characteristic of the course work.

College Opportunity Programming (COPing)

This program, funded under the Equal Education Opportunity legislation, Act 101, serves students who are academically and financially disadvantaged. COPing students are chosen on the basis of their academic potential, motivation and aspirations. Students receive counseling and tutoring assistance as part of the COPing program.

The COPing Program also includes a four-week summer orientation. Students are in classes for two weeks, studying reading, math and English, and in shops and labs for two weeks, acquiring "hands-on" experience. During the four-week program, students learn about the campus, the College, the staff, the faculty, and each other. This pre-college session makes the first semester easier and more meaningful for students.

For additional information on either the Developmental Studies Program or College Opportunity Programming, contact:

Director of Developmental Studies/Act 101
The Williamsport Area Community College
1005 West Third Street
Williamsport, PA 17701-5799
(717) 326-3761, ext. 266

CENTER FOR LIFELONG EDUCATION

The Center for Lifelong Education provides a variety of educational opportunities and services that complement the College's traditional degree and certificate programming.

Designed primarily to meet the educational needs of adults, the Center for Lifelong Education offers hundreds of vocational, avocational, and personal enrichment courses throughout the year. These courses are taught on the College's central campus in Williamsport as well as at satellite locations throughout the College's service area.

Most of the courses offered through the Center for Lifelong Education are non-credit. They do not involve formal testing, do not offer grades, and may not be used to fulfill requirements in any of the College's credit programs. They do offer students the opportunity to learn new skills, upgrade existing capabilities, develop increased knowledge, or participate in new experiences or activities.

Specialized courses are also available through the Center. Specific courses can be custom-designed to meet the training needs of individual businesses and industries. Continuing professional education courses are offered for those who require such courses in order to maintain licensure or certification. Trips and a variety of outdoor experiences are available through the Wilderness Adventure Program. Community service workshops and forums are also presented when there is a need to address specific topics which interest the residents in the College's service area.

The services available through the Center for Lifelong Education reflect its commitment to adult students. The Center is open from 8 a.m. until 8 p.m. Monday through Thursday and from 8 a.m. until 4:30 p.m. on Friday during the fall and spring semesters.

All of the programs and services available through the Center are financially self-sustaining. Nevertheless, all courses and services are modestly priced and are very competitive with those offered by other institutions.

The primary goal of the Center for Lifelong Education is to provide high quality, low cost educational opportunities and services—in locations that are accessible—at times that are convenient. For more information or to discuss your educational needs, please visit the Center for Lifelong Education in Room 102 of the Academic Center. If you prefer, you may call the Center at 327-4768. You will receive a warm reception and competent assistance.

The Center for Business and Industrial Advancement

The Center for Business and Industrial Advancement is part of the College's non-credit programming operation. The Center's mission is to: a) coordinate the College's contacts with area business and industry, b) identify their educational and training needs, and c) develop and implement programs and services designed to meet those needs.

The Center for Business and Industrial Advancement reflects the College's commitment to playing a major role in the development of a viable economic future for the region. The Center is designed to serve as a resource for existing businesses and industries as well as new companies relocating in the area. For more information on services available through the Center, please call the Coordinator of the Center for Business and Industrial Advancement at (717) 327-4775.

SECONDARY VOCATIONAL PROGRAM

The Williamsport Area Community College is the only community college in the state to offer secondary vocational education. The College's Secondary Vocational Program is a unique example of what school districts and a community college can provide for their students and their communities.

The Secondary Vocational Program at The Williamsport Area Community College provides education and training to high school students who want to prepare for employment following graduation as well as those who plan to pursue advanced education or training. High school students enrolled in the program spend one-half of the school year (on a nine-week alternating schedule) at their home high schools where they complete the academic courses required for high school graduation and the other half of school year attending vocational/technical classes at the College.

The Secondary Vocational Program offers a combination of classroom work and practical experience. Students work in the College's shops and labs to learn and practice the skills they will need when they begin working. Senior year students may gain additional experience through participation in the cooperative education program.

Graduates who want to continue their education at the college-level in the same field of study may be granted advanced placement credit for the skills and competencies acquired in the program.

The College also provides a Senior Year Options program for high school students. This program offers qualifying students the opportunity to begin college-level work in selected technical programs as high school seniors.

PROGRAMS

Auto Body Repair
Automotive Mechanics
Aviation Maintenance Technician
Carpentry
Cooperative Education (CAPSTONE)
Cosmetology
Drafting - Architectural/Mechanical
Electrical Construction
Forestry
Health Assistant
Horticulture
Machine Shop
Quantity Foods Production and Service
Small Engine Repair
Welding

SENIOR YEAR OPTIONS

Agribusiness
Computer Information Systems
Computer Operator
Dairy Herd Management
Electronics Technology

new w/ school buses

PARTICIPATING SCHOOL DISTRICTS

Canton Area
East Lycoming
Jersey Shore Area
Keystone Central
Loyalsock
Millville Area
Montgomery Area
Montoursville Area
South Williamsport Area
Sullivan County
Warrior Run
Wellsboro Area
Williamsport Area

For information on this program contact the Director of Secondary Vocational Programs at (717) 327-4773, or write to the Office of Secondary Vocational Programs at the College.

COMMENCEMENT AWARDS

Commencement awards give public recognition of achievement in various areas accompanied by cash awards in varying amounts.

ACCOUNTING FACULTY AWARD *for outstanding achievement in accounting to a non-transfer student selected by the accounting faculty on the basis of academic standing.*

ANCHOR/DARLING VALVE AWARD *for scholastic achievement in a certificate program in applied arts and sciences.*

AVCO AWARD *for scholastic achievement in humanities and social sciences.*

LEWIS H. BARDO MEMORIAL AWARD *to a student who exemplifies the ideals of Lewis H. Bardo (devotion to duty, helpfulness to others, friendliness, high ideals).*

DALE RUSS BERG AWARD *for proficiency in the operation and use of heavy equipment.*

ELLEN HARDING BERRY NURSING AWARD *presented to the student who has displayed outstanding scholastic achievement and exceptional ability in practicum and communication skills.*

BUSINESS MANAGEMENT FACULTY AWARD *presented to a management student for achievement in the field of study, for leadership qualities and for cooperation with faculty and peers.*

CENTRAL PENNSYLVANIA CHAPTER OF CHARTERED LIFE UNDERWRITERS' AWARD *to an outstanding student in the two-year associate degree program in the Business and Computer Technologies Division who shows promise in the insurance field.*

CLINTON ELECTRICAL SUPPLY COMPANY, INCORPORATED, AWARD *for an outstanding electrical student.*

COMPUTER SCIENCE FACULTY AWARDS *to outstanding students in the Computer Science program who have excelled in the program and who have exhibited those qualities of leadership, friendship, cooperation and dedication that will make him/her a valuable addition to the profession. One award will be given to a two-year Computer Information Systems Degree student and one to a one-year Computer Operator Certificate student.*

DEANS' AWARD *for scholastic achievement and service to the College.*

DENTAL HYGIENE FACULTY AWARD *to the student who demonstrates the most dedication to the program.*

DENTAL HYGIENE FACULTY AWARD *to the student who demonstrates the most improvement in professional growth.*

ELIZABETH R. DOWNS AWARD *for secretarial proficiency.*

LOUIS S. EISEMAN BUSINESS AWARD *to an outstanding graduating student in Business Management or Retail Management who has achieved above average competencies and has demonstrated leadership and concern for others.*

FORKLIFTS, INCORPORATED, AWARD *given to a graduating cooperative education student in the Service and Operation of Heavy Construction Equipment program who has demonstrated superior competencies in the service area.*

GAMMA EPSILON TAU FRATERNITY AWARD *to the student in the Graphic Arts program who exhibits outstanding development in skill, capability and leadership, and a willingness to help others.*

THE DR. CLARKE J. HOLLISTER MEMORIAL AWARD *to the graduating student of Dental Hygiene who has displayed outstanding interest and accomplishment in the area of patient education.*

HU-FRIEDY GOLDEN SCALER AWARD *for outstanding student achievement in the Dental Hygiene program.*

KEELER-HOFF SUPPLY COMPANY AWARD, *in memory of the late Samuel H. Hoff, for his understanding and appreciation of the need for plumbing and heating tradespeople to be able to use mathematics effectively and accurately in the application of their craft, to the graduating student in plumbing and heating who excelled in related mathematics and attended college under exceptional conditions.*

DAVID LETSCHER MEMORIAL SCHOLARSHIP AWARD *to a student in the Computer Information Systems program at The Williamsport Area Community College based on the following criteria:*

scholastic achievement, leadership ability, and dedication as exhibited by David Letscher. The recipient is selected by the Computer Information Systems faculty and the award is donated by the West Branch Data Processing Association.

LIQUID CARBONIC CORPORATION AWARD *to a graduating Welding student who has demonstrated superior ability and an outstanding attitude.*

LYCOMING COUNTY DENTAL SOCIETY AWARD *to the student who has obtained the highest scholastic standing for the prescribed years of Dental Hygiene study.*

LYCOMING RADIOLOGY ASSOCIATES, LTD. AWARD *for the student who most nearly exemplifies the ideals of selflessness, unusual devotion to duty, sensitivity to the patient's comfort and needs, and service to colleagues, patients and the hospital beyond the ordinary.*

THE JACK MINNIER ACHIEVEMENT AWARD IN BUSINESS *to a graduate of the Business and Computer Technologies Division who earned at least a 3.00 cumulative grade point average and who exhibits personal achievement, personal perseverance, poise, personality, and leadership qualities.*

THELMA S. MORRIS AWARD *presented to the student who has demonstrated outstanding qualities of a practical nurse in the clinical area.*

THE EWING W. MUESELER AWARD *for the student showing the highest degree of proficiency in the Diesel program.*

THE NORTH CENTRAL DENTAL HYGIENISTS' ASSOCIATION AWARD *to the student who exhibits the greatest enthusiasm and commitment to the Dental Hygiene program.*

THE NORTHERN CENTRAL BANK ANNUAL AWARD *to a graduating student in the two-year Computer Information Systems Associate Degree curriculum based on the following criteria: the student (1) must plan to enter the data processing field, (2) must have demonstrated excellence in programming and other data processing curriculum, (3) must have maintained an above average total scholastic achievement, and (4) must have demonstrated a high degree of leadership ability.*

PENNSYLVANIA INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS' AWARD *for excellence in accounting studies in the Business and Computer Technologies Division under criteria set forth by the Pennsylvania Institute of Certified Public Accountants.*

PENN-YORK LUMBERMAN'S AWARD *for outstanding citizenship and interest in management and wise use of forest resources.*

PHI BETA LAMBDA FRATERNITY AWARD *for performance and dedication to the fraternity.*

PRESIDENT'S AWARD *for leadership and service to the college community.*

PULLMAN POWER PRODUCTS AWARD *for scholastic achievement in an associate degree program in applied arts and science, Industrial Technology Division.*

MILTON H. SCHULTZ AWARD *to the Plumbing and Heating student who excelled in related soldering and welding skills.*

SECRETARY OF AGRICULTURE AWARD *presented to the Dairy Herd Management student who has performed the course work in an exemplary manner and has exhibited a consistently positive attitude.*

DALE C. SHOPE AWARD *to an outstanding diesel graduate.*

HELEN A. SMITH AWARD *presented to the student who has shown extraordinary achievement in theory, practicum, and personal growth.*

CHAPTER 49 OF THE SOCIETY OF MANUFACTURING ENGINEERS (SME) AWARD, *a certificate of merit to the SME student-member who has contributed most to the advancement of manufacturing education.*

ROSE STAIMAN MEMORIAL AWARD *to the student who fulfills the requirements of brotherhood, service to college and community, and scholastic achievement.*

WILLIAM J. STITZEL MEMORIAL AWARD *for the graduate from the Heavy Construction Equipment department who best exemplifies William J. Stitzel's dedication and service to the College and the student body.*

ROBERT G. THOMAS AWARD *for the graduating student who has attained the highest cumulative average in Welding.*

TRUSTEES' AWARD *for achievement under exceptional conditions. (Awarded to two students.)*

U. A. LOCAL NO. 810 PLUMBERS AND STEAMFITTERS AWARD *to a graduating student in plumbing and heating, residing in the Local No. 810 membership area, who has shown a strong interest and desire in becoming a member of the Plumbers and Steamfitters Local No. 810.*

WALL STREET JOURNAL STUDENT ACHIEVEMENT AWARD *to that graduating student demonstrating superior achievement in Business Administration.*

THE WEST BRANCH RADIOLOGICAL ASSOCIATES AWARD *to an outstanding graduate student of the Radiography Associate Degree program who has demonstrated high scholastic achievement, competence in and dedication to the profession, and a caring attitude toward all people.*

WORD PROCESSING FACULTY AWARD *presented to the word processing student who has demonstrated the highest level of proficiency in the operation of word processing equipment and who has exhibited the characteristics of an ideal employee.*

ADVISORY COMMITTEES

GENERAL ADVISORY BOARD

E. VAN ANDERSON/Vice President, Grit Publishing Company
ROBERT M. BURNS/Chairman, Muncy Area Community Revitalization Committee
LUTHER M. ERTEL/President, Nippon Panel Company
MICHAEL R. J. FELIX/Director of County Health Improvement Program
RICHARD C. HAAS/Controller, Montour Auto Service Company
WILLIAM W. JUDSON, M.D.
PAUL D. LESSARD/President, Q.R.P. Inc.
CHARLES J. LYDON/Senior Vice President, Commonwealth Bank & Trust Co., N.A.
DAVID A. McGARVEY/Owner, B&S Picture Frames, Inc.
ANN S. PEPPERMAN/Attorney, McNerney, Page, Vanderlin & Hall
PHILLIP A. PETTER/Merchandising Manager, Reliable Furniture Galleries
SHERMAN R. REIGLE/Superintendent, Hermance Machine Company
MARGARETTA STEWART
JOSEPH E. WENTZLER/Owner, Wentzler's Fruit Farms

NORTH CAMPUS

RALPH C. ANTRIM, JR./Administrator, Soldiers and Sailors Memorial Hospital
JAMES DUNHAM/Dunham's Stores
RALPH ELY/Plant Manager, GTE Sylvania
RICHARD W. FORD/Vice President, Commonwealth Bank and Trust Company
WILLIAM K. FRANCIS/President, Citizens and Northern Bank
CRAIG HORTON/ABC Gaines
CLINT KREITNER/President, American Information Systems
DR. BONELYN KYOFSKI/Mansfield University
JACK LEWIS/Wellsboro Chamber of Commerce
ROBERT McCONNELL, SR./Farming Business

ADVISEMENT AND CAREER SERVICES

MARILYN BEAR/Pennsylvania Power and Light Company
HELEN BRINK/Retired Guidance Counselor and School Director
EDWARD W. CLAUDIUS/Guidance Counselor, Montoursville Area High School
MARY JANE EVENDEN
WAYNE FAUSNAUGHT/Supervisor of Guidance and Counseling, Williamsport Area School District
COZY ROBINSON/Teacher
RHONA WILK/Coordinator, Employee Relations, Williamsport Hospital
MICHAEL J. WILT/Director, Lysock View Nursing Home

COOPERATIVE EDUCATION

AL CLAPPS/Manager, Burger King
RALPH EVANS/Owner, Ralph's Ford Service Center
ARTHUR L. FRY/Personnel Director, Pennsylvania Department of Transportation
JOSEPH GIUNTA/Manager, Industrial Relations, Stroehmann Bakeries
RONALD HAMPTON/Supervisor of Computer Programming, Sprout-Waldron Division, Koppers Company, Inc.
JOSEPH T. HERSH/Bureau of Apprenticeship and Training
SAMUEL HOFF, JR./Owner, Keeler-Hoff Supply Company
DENISE KENNEDY/Administrative Analyst, Pennsylvania Department of Transportation
CHRISTOPHER S. LUTZ/Service Technician, Fowler Motors
ELERY W. NAU/Elery W. Nau Hardware
BONNY WHEELAND/Executive Director, Lycoming County Chapter, American Red Cross
ALLEN WOLESLAGLE/Branch Manager, Forklifts, Inc.

DEVELOPMENTAL STUDIES

SUZANN BENNETT/Coordinator, Food Service
ANTHONY DELISI, JR./Williamsport Area High School
DENNIS FINK/Instructor, Horticulture
ANN MARIE FURDOCK/Instructor, Biology
ROBERT HAFER/Instructor, Auto Body
PAUL HEIM/Associate Professor, Carpentry
NED McCLINTOCK/Pennsylvania Power and Light Company
LYMAN MILROY/Associate Professor, Mathematics
VERONICA MUZIC/Professor, English
CHALMER VAN HORN/Associate Professor, Drafting
ROBERT WASAFF/Student
MICHAEL WILT/Administrator, Lysock View
THOMAS WINDER/Assistant Professor, Computer Science

BUSINESS AND COMPUTER TECHNOLOGIES

Accounting

FRANK COFFEY/President, Stroehmann Bakeries
R. A. FLANIGAN III/Partner, Eberhart and Flanigan, Certified Public Accountants
JEFF HOYT/Controller, Williamsport National Bank
LEE A. VIARD/Tax Consultant

Business Management

JOHN ALBARANO/President, Albarano Construction Company
ROBERT HARDER/Northern Central Bank
JACK MINNIER/Communications Systems Consultant, AT&T Communications*
TERRY L. NEUBOLD/Chief Executive Officer/Treasurer, The Hartman Agency, Inc.

Computer Information Systems

PETER M. CODISPOTI/Senior Systems Analyst, C.A. Reed
JAMES CUNNINGHAM/President, Computer Clinic Inc.
RONALD FENTON/Systems Manager, Woolrich Woolen Mills
TIMOTHY GUYER/Divisional MIS Director, The West Company
FRITZ HOCKMAN/Controller, DP Manager, Chemcoat
HENRY KLEIN/Manager, Data Processing, Chemcut Corporation
DICK LUDWIG/Computer Operations Manager, Commonwealth Bank and Trust Co., N.A.
RAY LYNCH/Manager, Data Processing, Pullman Power Products
MARVIN MENNE/Data Processing Manager, Northern Central Bank and Trust
BLAINE E. MOYER/Senior Vice President of Operations Division, Northern Central Bank and Trust
WAYNE MOYER/Supervisor MIS Technical Services, Koppers, Sprout Waldron
ANNE PARSONS/Manager of Data Administration, Commonwealth Bank & Trust Company
CHRIS RAGER/Vice President of Data Processing, Williamsport National Bank
GEORGE WALTZ/Supervisor, Information Management, G.T.E. Products Corp.
GLEN WENTZEL/Vice President, Finance, Cenpro, Inc.
KEITH WOODCOCK/Systems Analyst, American Home Foods

Retail Management

ELIZABETH A. BORDEN/Lewisburg Builders Supply
CAROL SMITH/Director, Lycoming Mall Association

*Graduate of The Williamsport Area Community College

Secretarial Office Administration

WILLIAM KNECHT/Attorney
PATRICIA MILLER/Personnel Generalist, Divine Providence Hospital
ANNE MARIE McDERMOTT RAY/Public Information Coordinator, The Williamsport Hospital

CONSTRUCTION TECHNOLOGY

Air Conditioning/Refrigeration

CHARLES A. DINSMORE/Manager, Refrigeration and Store Service, Weis Markets, Inc.
GLENN GOODFELLOW/Manager, Service Training Center, William Bynum Education Center
ROBERT F. GUNNS/Energy Management Consultant, Pennsylvania Power and Light Company
GEORGE LaVELLE
JOHN LEIPHART/Training Director, Electronics and Service Areas, York Division of Borg Warner
THOMAS A. QUEITZSCH/Engineered Machinery, York Division, Borg-Warner Corporation
RICHARD SPEACHT
JAMES STUCK/Stuck Equipment Company
JOHN VARGO/Nutech Engineering Services, Inc.

Architectural Technology

ARTHUR ANDERSON/Assistant Professor, The Pennsylvania State University
THOMAS B. BROWN/Assistant Professor, Architectural Engineering, The Pennsylvania State University
SAM DORNSIFE/Interior Decorator
PAUL FRIES/Architect
JEFFREY L. McKINLEY
EARL MOWREY/Contractor*
JEFF SMITH
JAY A. YODER

Building Construction Technology/Construction Carpentry

RONALD L. CARNS/Carns Brothers, Inc.
CHARLES D. FIANTACA/CDF Home Improvements
JEFFREY FINKE/Carpenter, Lundy Construction Company
FRANCIS B. LORSON/Partner, Lorson and Lorson Building Contractors
CHARLES A. SHIPTON/President, C. A. Shipton, Inc. Building Contractors
CARL E. SNYDER/Secretary, G. C. Corporation
MAX M. THOMAS/General Superintendent, Lundy Construction Company
ROBERT WOOLCOCK/Pennsylvania Power and Light Company

Electrical Occupations

RALPH AGNONI/Project Engineer, Shop-Vac Craftool Company
HARRY FISLER/Manager, Conservation Services, Pennsylvania Power and Light Company
GARY GABLE/Paul Gable and Sons Electric, Inc.
ALAN KAUFMAN/Plant Engineer, Shop-Vac Craftool Company
GUY KOSER/President, Koser Electric Company
DAVID KRANZ/Inspector, Middle Department Inspection Agency
MICHAEL LECCE/Owner, Lecce Electric Company
DARYL MARDEN/Jersey Shore Steel Company
ELERY NAU/Hardware and Electrical Supplier
JOHN PRESTON/Operating Manager, Pennsylvania Power and Light Company
CARL SMOLLINGER/Bethlehem Steel Corporation
RANDALL WRIGHT/Wright Sign Company

Electrical Technology

VIRGIL COLAVITTI/Proctor and Gamble, Charmin Plant
CHERYL DESMOND/Honeywell, Inc.*
JOHN HOUGH/Retired Professor, The Williamsport Area Community College
KIM KONYAR/Litton Industries
ANGELO MARTINOZZI/Avco Corporation, Lycoming Division
CARLTON POLK/GTE Sylvania, Inc.
JACK SHAFFER/Avco Corporation, Lycoming Division

Plumbing and Heating

PETER AXEMAN, JR./Axeman Anderson Boiler
ROBERT L. BERKHEIMER/Executive Director, PAPHCC
HAROLD J. CARPENTER/Business Manager, Local 810, Plumbers and Steam Fitters Union
MICHAEL CELLINE/Montour Auto Service Company
JOHN F. ENGEL/Plumbers and Steam Fitters Union
MARK HELBLEY/ General Manager, Sunbank Solar Corporation
SAMUEL R. HOFF/President and Treasurer, Hoff Supply Company
RON PAJOR/Manufacturing Representative, Mechanical Products
WADE PUGH/R. A. Munder Company, Inc.
MICHAEL STEINBACHER/Service Manager, Montour Auto Service
LESTER WOLFGANG/Williamsport Plumbing and Heating Company

HEALTH SCIENCES

Dental Assisting

DR. CHARLES DURZYNSKI/Dentist
DR. STEPHEN FISHER/Dentist
LOIS LEVAN/Dental Assistant
DR. HEISTER LINN/Dentist
SONIA MYERS/Dental Assistant
MARSHA PERSON/Dental Assistant
DR. CLAYTON PESILLO/Dentist
KAY RARLEY/Dental Assistant
DR. DANIEL C. WURSTER/Dentist

Dental Hygiene

DR. ROBERT FREDRICKSON/Private Practice
CINDY KEIM/Dental Hygienist
SANDRA NOLAN/District Dental Hygienist, Pennsylvania Department of Health
PAMELA PARKS/Dental Hygienist
DR. JEFFERSON PORTER/Private Practice
DAVID TULE/Dental Hygienist*
DR. MENDAL VANVALIN/Private Practice
DR. DANIEL WURSTER/Private Practice

Food and Hospitality Management/Dietetic Technician

JOAN R. ALKIRE/Registered Dietitian, The Williamsport Hospital
HARVEY BOATMAN/Owner-Manager, Rinella Produce Company
RICHARD BURICK*
AL CLAPPS/Owner-Manager, Burger King
LINDA CLAWSON/Proprietor, Sip and Dip Bakery*
MARY GIONTA/Assistant Chef, Inn at Turkey Hill*
MICHAEL GOODERAU/Manager, Penn-Wells Hotel
BOB HAM/Country Cupboard, Inc.
SISTER VINCENT HUBER/Registered Dietitian, Divine Providence Hospital
DR. SANDRA LINCH/Chairperson, Home Economics Department, Mansfield University
CECILIA McLAUGHLIN, R.D./Food Service Director, Williamsport Area School District
LORRAINE MANLEY/Food Service Supervisor, Leader Nursing Home
DAVID MIELE/Owner, Hillside Restaurant
LEE NEWSWANGER/Unit Manager, Pizza Hut*
VIOLA PFLEEGOR/Food Service Director, Methodist Home*
PEGGY STOUFFER/Home Economics Instructor, Williamsport High School
TRUDY WELSHANS/Owner-Manager, Hotel Mohawk

*Graduate of The Williamsport Area Community College

Practical Nursing

NANCY BERGESEN, R.N./Director of Nursing Service, Divine Providence Hospital
KIM FISHER, R.N./Quality Assurance Coordinator, Department of Nursing, The Williamsport Hospital
JANICE HOFER, L.N.P.
GREGORY MEREDITH, R.N./Director of Nursing Service, Muncy Valley Hospital
SANDY OLSON/Vice President for Nursing, The Williamsport Hospital
MICHALINE SWANKOSKI, R.N./ Vice President for Patient Care Service, Lock Haven Hospital

Radiography

ROBERT ALBAN/Technologist, Divine Providence Hospital
SISTER AUGUSTA/Technologist, Divine Providence Hospital
WILLIAM BANNON/Student
FRANK ELLIS/Technologist, The Williamspost Hospital
KARON KEITH/Technologist, Jersey Shore Hospital
CAROL MUTHLER/Technologist, Lock Haven Hospital
DR. HARSHAD PATEL/Radiologist, Divine Providence Hospital
THOMAS SCHNARS/Technologist, The Williamsport Hospital
DR. GORDON SHAW/Radiologist, The Williamsport Hospital
KAREN SNYDER/Technologist, Divine Providence Hospital

Surgical Technology

NANCY E. BERGESEN, R.N./Director of Nursing, Divine Providence Hospital
DR. MICHAEL BUMAGIN/Plastic Surgeon
SUSANNE CRESS, R.N., C.N.O.R./Patient Care Coordinator, Divine Providence Hospital
SISTER JEAN/Administrator, Divine Providence Hospital
CAROL RITTER, C.O.R.T.
PATRICIA SOLLEY, R.N., C.N.O.R./Assistant Director of Nursing, Special Care Units, Divine Providence Hospital
ELIZABETH SPRINGMAN, R.N./Assistant Patient Care Coordinator, Divine Providence Hospital
DR. WILLIAM TODHUNTER/Thoracic and General Surgeon
MARY LOUISE WOLFE, R.N./Director of Operating Room, The Williamsport Hospital

INDUSTRIAL TECHNOLOGY

Automated Manufacturing Technology

JOSEPH GEHRET/Norcen Industries
AL KAUFMAN/Shop-Vac, Inc.
JAMES KUSIAK/Central Susquehanna Outreach Coordinator
DAVID NEILSON/The West Company
JAMES WEEKS/Grumman Allied Industries
AL SOYSTER/Pennsylvania State University
GEORGE P. WOLFE/Director of Academic Computing
PAUL LESSARD/QRP, Inc.

Civil Technology

TIMOTHY J. CROTTY/Susquehanna Supply and Construction Company
ROBERT W. FERRELL, JR./Civil Engineer
TED FRANKLIN/Land Surveyor
CLIFTON A. FRY, JR./U.S. Geological Survey
DR. JAI KIM/Bucknell University
WILLIAM PARSONS/Regional Water Quality Manager, Pennsylvania Department of Environmental Resources
CHARLES RUSSO/Construction Inspector
TIMOTHY L. WALDMAN
ATWOOD WELKER/Assistant District Engineer, Pennsylvania Department of Transportation
DONALD WILBUR/Chief Photogrammetry and Surveys, Pennsylvania Department of Transportation

Drafting Technologies

ANNETTE ARTHUR
MICHAEL BECKMAN/Acan Cable Company
RAYMOND BOWER/Young Industries
JAY DAWES/Chief Draftsman, Anchor Darling Valve Company
CLEASON F. HALL/Sprout-Waldron Division, Koppers Company, Inc.
SAM MILLER/Kennedy Van Saun
CHARLES O'BRIEN
WILLIAM TUTTLE/GTE Products

Electronics Technology

JAMES HAMILTON/IBM
DONALD HILL/Divine Providence Hospital
RICHARD IRACE/DuPont, Inc.
FREDERICK KENDIG/GTE Products Division
CARL NILSON/IBM Corporation
KARL ORWIG/AT&T
RICHARD PASCO/Litton Industries
EDWARD VIBERT/GTE Sylvania, Inc.
KATHY WEHR/GTE Products Division
ROBERT WHEELER/Snap-on Tool Company
GEORGE WOLFE/Director of Academic Computing

Machinist General/Toolmaking Technology

JERRY BURKE/GTE Sylvania
MICHAEL CERVINSKY/Avco-Lycoming
PAUL COLEMAN/DuPont Connector Systems
RAYMOND MARSHALEK/Fairfield Manufacturing
LEHMAN MYERS/Litton Industries
CHUCK RATH/Spang and Company
SHERMAN REIGLE/Hermance Machine Company
STERLING SLUSSER/American Home Foods

Welding

FRANK BARTOLOMEO/Superintendent, E. Keeler Company
LARRY BEACH/High Steel
MERRILL BLOOM
JAMES CARPENTER/Local 810, Plumbers and Steam Fitters Union
LYNN CRIST/Young Industries
GARY DARRIN/United Chemco Company
ROBERT EFFEN/Ferno Ille Division, Ferno-Washington, Inc.
LIONEL FORTIER/Welding Engineer, Anchor Darling Valve
GEORGE GEISE/Kennedy Van Saun
WILLIAM McLEAN/Grumman Allied, Inc.
WILLIAM MILLS/Decker-Follmer Welding Company
R. THEODORE PEET/High Steel
ROBERT SHANDRY/Cromaglass Corporation
PHIL SNYDER
ALEX STAVISKY/Koppers-Sprout Waldron
EMERSON SWINEHART/Piper Aircraft, Retired
WILLIAM YOST/A. C. and F. Industries

INTEGRATED STUDIES

Advertising Art/Technical Illustration

CHET ACHORD/Graphic Arts Consultant
MAX AMEIGH/Educator, Craftsman, Artist
DAVID BOWEN/Photographic Illustrator, Becker and Bowen Associates
FREDERICK GILMOUR/Director of Instructional Media, The Williamsport Area Community College
MARK JONES/Graphic Artist, Designer, The Williamsport Area Community College
JAMES MAULE/General Manager, Penn Central Advertising, Inc.
MICHAEL MURPHY/Art Department, Supelco Industries
BRAD MOSIER/Creative Director, Greystone Advertising, Inc.
RICK RIPPON/Art Director, WNEP-TV, Wilkes-Barre and Scranton

*Graduate of The Williamsport Area Community College

Broadcasting/Journalism

DR. DOUGLAS CAMPBELL, Lock Haven University
ROBERT CARROLL/Director of Administration, WNEP-TV, Wilkes-Barre and Scranton
JAMES COOLEY/Owner, Greystone Advertising
GARY CRISSMAN/WWPA Radio Station, Williamsport
CHERYL EBERSOLE/Account Executive, Barash Advertising, Inc.
FREDERICK GILMOUR/Director of Instructional Media, The Williamsport Area Community College
MICHAEL KAUFHER/Senior Vice President, Corporate Communications, Geisinger Medical Center
ELAINE LAMBERT/Director of Communications, The Williamsport Area Community College
MICHAEL RAFFERTY/Editor, *The Sunday Grit*, Williamsport
CAREY SIMPSON/Manager, Allegheny Mountain Network
CLIFFORD A. THOMAS/Editor, *Sun-Gazette*, Williamsport
ERIN WALSH/Director of Travel Development, Williamsport Chamber of Commerce

Graphic Arts/Printing

RICHARD DYER/Penn Graphic Supply Co.
HOWARD MOREHART/Reed-Hann Litho
JAMES MUCHLER/Director of Adminstrative Services, Bucknell University
BRADLEY NASON/Chairperson, Mass Communication Department, Lycoming College
JANET ROBINSON/Sun Area Vocational-Technical School
RON SHAMMA/General Manager, Commercial Printing, Grit Publishing Company

Human Services

VICTORIA AYERS/Endless Mountains Treatment Center
MICHAEL BRENNAN/Rehabilitation Manager, Office of Vocational Rehabilitation
DR. ROBERT CONROY/Hope Enterprise, Inc.
JOHN ENGLE/Pennsylvania Board of Probation and Parole
CATHY TECHMANSKI-HOFFMAN/Executive Director, Lock Haven Infant Development Program
JOHN T. KONIECZNY/Executive Director, West Branch Drug and Alcohol Abuse Program
TIMOTHY MAHONEY/Director of Treatment, Lycoming County Prison
VIRGINIA CAMPBELL/Broad Acres Nursing Home Association
PATRICIA ESSIP/Assistant Director, Lycoming/Clinton Bi-County Office for the Aging
SALLY FRANZ/Wise Options for Women
PAUL D. GROSS/Tioga County Board of Assistance
JAMES WILKERSON/Director of Base and Crisis Service, Lycoming/Clinton County Mental Health/Mental Retardation
NANCY WOLLET/Department of Children and Youth, Lycoming County

NATURAL RESOURCES MANAGEMENT

Agribusiness/Dairy Herd Management

TED DOEBLER/Doeblers of Pennsylvania Hybrids, Inc.
THOMAS DUM, JR./Consultant, Holstein Association
LLOYD EBERSOLE/Assistant Manager, Sire Power, Inc.
SAMUEL R. FRY/Farm Operator
JAMES GOTTSCHALL/Manager, Agway
JOHN GRIFFITH/General Manager, Farm Credit Service
RICHARD GROVE
PATRICIA HALLOWELL/Farm Operator
THOMAS B. HARDING, JR./President, Progressive Agri-Systems, Inc.
DAVID JARRETT/Dairy Farmer
CLIFFORD KOHLER/District Conservationist
MARLIN H. McCLELLAN/Regional Director, Pennsylvania Department of Agriculture
WILLIAM MESSERSMITH/Lycoming County Cooperative Extension Office
GEORGE ROBINSON/Owner-Operator, Feed Store
JOSEPH SICK/Retired Division Director, The Williamsport Area Community College
DR. GLENN STEVENS/Retired Professor
DAVID THOMPSON/Manager, Agway
FRANK WHITE/Farm Operator
THELMA WHITE/Farm Operator
DAVID WILLIAMS/Thomas L. Dunlap Farm Equipment
WILLIAM WILLIAMS/Vice President, Jersey Shore State Bank
JOHN YORK/York and Associates

Forest Technology

RAY AZZATO/Regional Park Superintendent, Bureau of Parks
DONALD BENSON/Representative, Cotton Hanlin
MAX BINGAMAN/President, Bingaman and Sons
HARRY BRESSLER/Division Manager, Burke-Parson-Bowlby Corporation
WILLIAM W. BROOKS III/Pulpwood Producer
RON CALIFORNIA/Mann & Parker Lumber Company
ROY W. CUMMINGS, JR./Vice President, Cummings Lumber Company
ROBERT DAVEY/District Forester, Bureau of Forestry
WILLIAM DEAN/Vice President, Donald Dean and Sons
BRADFORD T. DEMPSEY/President, Hardwood Lumber Manufacturer's Association of Pennsylvania
RONALD GALE/Wood Utilization Advisor, Bureau of Forestry
JACK M. GILES/Game Management, Pennsylvania Game Commission
ROBERT HERZ/Eastern Wood Products
GORDON HILLER/Field Representative, Department of Environmental Resources
KEITH HORN
DAVID M. HUNTER, JR./Georgia Pacific
LEONARD KUHNS/Kuhns Brothers Lumber Company
FRANCIS X. KENNEDY/District Forester, Bureau of Forestry
DALE KEPNER/Plant Manager, Rishel Furniture Company
PAUL E. LANDON/Timber Acquisition Manager, Proctor and Gamble Paper Products
PATRICK M. LANTZ/Pennsylvania Bureau of Foresty
DWIGHT LEWIS/Lewis Lumber Company, Inc.
MELVIN LEWIS/Lewis Lumber Company, Inc.
JOHN MALLERY/Mallery Lumber Company
PHILLIP McCARTHY/Manager, Wood Procurement, Proctor and Gamble Paper Products
GARY STACKHOUSE/Williamsport Area High School
A. E. STAMER/Wood Procurement, Masonite Corporation
PAUL SWARTZ/Director, Bureau of Soil and Water Conservation, Department of Environmental Resources
MICHAEL THOMPSON/Hughesville Senior High School
R. R. THORPE/Director, Bureau of Forestry
RAY WHEELAND/Wheeland Sawmill
MICHAEL YEAGLE/Timber Harvesting
BRUCE ZINCK/Vice President/General Manager, Reese Lumber Company

Horticulture

MARLIN E. ARBEGAST/Phyl Mar Associates
DENNIS BURD/Owner, Country Market Landscape Garden Center
DIANA CIZEK/Country Market & Landscape Garden Center
NEIL DUNKLE/D.A.D.'s Lawn & Garden Center
ROBERT ESHLEMAN, JR./Owner, Eshleman's Nursery
WAYNE ETTINGER/Ettinger's Landscaping
GARY FEEREE/White Deer Golf Course
CHRISTINE FINK
HELEN FRENCH/Enchanted Florist
EDMUND GOLOMB, JR./Owner-Manager, Andres Florist
ROSEMARY HOLMES/Nevill's Flowers
WILLIAM HOLMES/Nevill's Flowers
BRIAN KALUZNY/White Deer Golf Course
FRANCIS LEHMAN/Crown American Corporation
DANIEL LICHTENWALNER/Daniel's Landscaping
KATY Z. MILLER/Sales Manager, Plant Kingdom, Division of J.L. Dillon, Inc.

*Graduate of The Williamsport Area Community College

MARILYN L. MURPHY/Owner, House of Flowers
BARRY L. PLOWMAN/Shiloh Nurseries, Inc.
BILL C. SLATER/Binghamton Slater Company, Inc.
MIKE STEBBINS/Shiloh Nurseries, Inc.
CATHY VOGEL
WALLY WENTZ/Owner, Wally Wentz Florist

Outdoor Power Equipment

KEN BERGREN/Ken Bergren, Inc.
JOHN BUTTORFF/Buttorff's Hardware
KEITH BUTTORFF/Buttorff's Hardware
ALLAN DUNKLEBERGER/Hunter and Lomison, Inc.
ROBERT FOLMAR/Folmar's Mower Service
CHARLES GOTTSCHALL/G and R Garage
RICHARD GROVE/Clark's Farm Supply
JAMES KELLEY/Hunter and Lomison, Inc.
BOB LOGUE/Bob Logue's Motorcycle Sports
JEFF MATLACK/Country Cycle
RICHARD ROBERTS/Representative, Philadelphia Toro Company
CRAIG SWEITZER/Outdoor Hobby Center
DAN THOMPSON/Thompson's Garage
BENJAMIN J. TRAPANI/Ben's Lawn & Garden Equipment
CARL WALIZER/Dotterer and Kolesar Equipment, Inc.
WILLIAM YODOCH/Country Cycle Shop

Service and Operation of Heavy Construction Equipment

WAYNE ALEXANDER/Manager, Lycoming County Solid Waste Department
LEO ASHCRAFT/Personnel Training Manager, Highway Equipment Company
WILLIAM BASHISTA/B & B Equipment
JOHN BRAUN/Lycoming Silica Sand Company
VINCE CIOFFI/Furnival Machinery Company
T.J. CROTTY/President, Susquehanna Supply Company
JERRY D. DAVIS/Sales Representative, Stewart-Amos Equipment Company
ROBERT DIETZ/Personnel Director, L. B. Smith, Inc.
RUSSELL FAIRCHILD/Fairchild Brothers
BRIAN HANSEN/S. C. Hansen, Inc.
RICHARD HOOSE/Service Manager, Cleveland Brothers, Inc.
CLIFF LARSON/Sales Representative, L. B. Smith, Inc.
GEORGE LOGUE, JR./George E. Logue, Inc., Manufacturing Division
J. MICHAEL MURPHY/Cleveland Brothers, Inc.
THOMAS O'NEIL/Sales Representative, Ingersoll-Rand Equipment Company
JAMES ROCKEY/Bureau of Forestry
RALPH RODGERS/ Capital Lubricants Company
MARK SMITH/Cleveland Brothers, Inc.
WILLIAM E. WAGNER/Construction Service Engineer, P.E., Pennsylvania Department of Transportation
ALDEN WALSH/G. H. and F. C. Wagaman
ROBERT WEBB/Sales Representative, Highway Equipment Company
A. ALLEN WOLESLAGLE/Manager, Forklifts, Inc.
FRANK WOLYNIEC, JR./Manager, Allenwood Equipment
JAMES WOLYNIEC/Vice President, Frank Wolyniec and Sons Construction
LEE WOODHEAD/Woodhead Excavating

TRANSPORTATION TECHNOLOGY

Auto Body

DARYL FISHER/Claims Adjuster, Prudential Property and Casualty Insurance Company
MARK MOFFETT/Mark's Body and Frame Shop
JOSEPH J. ORELLI/Orelli Supply Company
DANIEL PLANKENHORN/Owner-Operator, Allied Auto
HERB SHIVERS/State Farm Insurance
EDWON STROBLE, JR./Owner-Operator, Stroble's Garage
BILL STUGART/Bill Mark's Ford
STEVEN WHIPPLE/Owner-Operator, Whipple's Auto Body

Automotive Mechanics/Automotive Technology

CECIL CALVERT/Shop Foreman, Bill Fry Ford
TOM COHICK/Service Manager, Van Campen Motors
GERALD ESHBACH/Service Manager, Larry Herron, Inc.
GARRY L. FOLTZ/Service Manager, Carnes Ford
VIRGIL FOWLER/Owner, Fowler Motors
DONALD KING/ Owner/Operator, K and W Transmissions
THOMAS KOONTZ/Mechanic, Van Campen Motors
DAVID SHIRN/ Owner, Shirns-Pontiac GMC
LARRY STROUSE/Reighard's

Aviation Maintenance Technician/Aviation Technology

ROBERT BARRETT/Retired Foreman, Avco Service Center, Lycoming Division
KARL CRIST/CAMS Air Maintenance Services
RICHARD FREEBURN/Chief Maintenance Inspector, Federal Aviation Administration
ROBERT GIFT/Co-Owner, Lock Haven Airmotive Company
WILLIAM LEUTHOLD/Technical Writer
CLYDE SMITH, JR./Service Inspector, Piper Aircraft
WILLIAM YAGGI/Service Technician, Cessna Aircraft

Diesel Mechanics

REX FORNATARO/Advanced Diesel Specialist, Inc.
JOHN GINGRICH/Branch Manager, Penske Detroit Diesel Allison
STANLEY KABATA/Shop Foreman, Pennsylvania Power and Light Company
C.D. KELLER/Co-Owner/Operator, Keller and Schell
JOHN KELLY/Owner/Operator, Hunter and Lomison, Inc.
WILLIAM C. MOORE/Maintenance Manager, Carolina Freight
ROBERT RUSSELL/Owner, Russell's Road Service
GENE STAVITZSKI/Wilkes Barre Mack Distributors
JIM TANNER/Shop Foreman, Day Equipment Company
WILLIAM THOMKE/General Manager, Nau and Thompson
B. A. WALKER/Vice President, Maintenance, Halls Motor Transit

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EDNA F. REIFF/Financial Aid Assistant

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DARLA L. BROWN/Instructor, Dental Hygiene; A.A.S., The Williamsport Area Community College; B.S., Lock Haven University

JOSEPH H. BROWN, SR./Instructor, Automotive; A.A., The Williamsport Area Community College

JAMES A. BRYAN/Counselor, Developmental Studies and Act 101 (Associate Professor); B.S., Lycoming College; M.S., Bucknell University

WILLIAM A. BURGER/Instructor, Plumbing and Heating

LAMONT E. BUTTERS/Associate Professor, Civil Technology; Professional Engineer; B.S., The Pennsylvania State University; M.S., Purdue University

CRAIG A. CIAN/Instructor, Food and Hospitality/Culinary Arts; B.S., The Pennsylvania State University

ANTHONY N. CILLO/Associate Professor, Journalism; B.A., The Pennsylvania State University

DAVID B. CLARK/Associate Professor, Chemistry; A.B., Lycoming College; M.S., Bucknell University

NED S. COATES/Associate Professor, English; B.A., Susquehanna University; M.A., University of Arkansas

ROBERT CRISSMAN/Instructor, Building Construction

JEAN M. CUNNINGHAM, R.N./Instructor, Practical Nursing; B.S.N., Columbia University

WILLIAM E. CURRY/Instructor, Diesel Mechanics; Certificate, Williamsport Technical Institute; Trade Comp., The Pennsylvania State University

ELIZABETH DAHLGREN/Assistant Professor, Business Administration; B.S., M.Ed., Bloomsburg University

DONALD M. DASCHER/Instructor, Computer Science; B.S., Wisconsin State University

ROGER E. DAVIS/Associate Professor, Mathematics; B.S., Clarion State College; M.S., Bucknell University

DAVID C. DIETRICK/Assistant Professor, Welding; A.A.S., The Williamsport Area Community College

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SAMUEL E. DRIVER/Instructor, Diesel Mechanics

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COLLEGE CALENDAR 1986-87

FALL SEMESTER 1986

August

18-22	Preparation: Fall Semester/New Student Orientation/Faculty Preparation
Mon. 18	Convocation/Advanced Placement Testing
Tue. 19	Late Registration
Mon. 25	Classes Begin
Fri. 29	Last Day to Request Advanced Placement Last Day to Add Classes

September

Mon. 1	Labor Day Vacation
Tue. 2	Classes Resume
Fri. 12	Last Day to Drop Classes without a Grade Last Day to Drop Classes with Refund (70%)
Fri. 26	Last Day to File "Petition to Graduate" For December Graduates

October

Fri. 10	Fall Vacation — No Classes
Mon. 13	Classes Resume
Fri. 31	Last Day to Drop Classes with a "W" Grade

November

Thu. 27	Thanksgiving Day Vacation
Fri. 28	Thanksgiving Vacation

December

Mon. 1	Thanksgiving Vacation
Tue. 2	Classes Resume
Fri. 12	Last Day of Classes Last Day to Drop Classes

SPRING SEMESTER 1987

January

5-9	Preparation: Spring Semester/New Student Orientation/Faculty Preparation
Mon. 5	New Student Orientation/Advanced Placement Testing
Tue. 6	Placement Testing Late Registration
Mon. 12	Classes Begin
Fri. 16	Last Day to Request Advanced Placement Last Day to Add Classes
Fri. 30	Last Day to Drop Classes without a Grade Last Day to Drop Classes with Refund (70%)

February

Fri. 16	Winter Vacation or Snow Make-Up

March

Sun. 22	Open House
Fri. 20	Last Day to Drop Classes with a "W" Grade

April

Wed. 15	Easter Vacation/Snow Make-Up
Thu. 16	Easter Vacation/Snow Make-Up
Fri. 17	Easter Vacation/Snow Make-Up
Mon. 20	Classes Resume

May

Mon. 4	Last Day of Classes Last Day to Drop Classes
Sat. 9	Commencement

For Information On Administrative Deadlines, Check The Appropriate Policy In This Catalog.

ABOUT THE COLLEGE

College Philosophy

We believe in the dignity and worth of all individuals. We believe learning is a lifelong process and that all individuals should have opportunities for lifelong education. We believe education should help individuals develop, to their maximum capacity, technical excellence, occupational proficiency, and academic ability. We believe education should also provide for personal enrichment. To prosper in a complex and changing society, we believe individuals must learn to think independently, value logical and tested conclusions, develop problem solving abilities, and function effectively with other people. We believe that competent performance contributes significantly to individual health and happiness and benefits the organizations and communities in which individuals work and live. We believe the College is an integral part of the community it serves and must respond to identified needs and interests. In delivering education services, we believe there is no substitute for the pursuit of excellence.

College Mission

The Williamsport Area Community College is a public two-year comprehensive community college with strong heritage and continuing emphasis on vocational-technical skills and knowledge. The College serves primarily the state-designated, 10-county Northcentral Pennsylvania area. Because of the extensive commitment to hands-on occupational programming, the College also serves as a regional, national, and international resource.

The College seeks to implement its philosophy by providing:

- quality postsecondary occupational and transfer programs and services for all those who can benefit, including those who have previously discontinued their formal education;
- quality vocational-technical programs and services for area secondary students;
- accessible full and part-time educational opportunities and services which address a wide spectrum of individual needs and abilities through varied formats, schedules, geographic locations, and short-term courses;
- educational programming related to economic and employment realities;
- additional and enriched career options through cooperation with industrial, business, professions, government, and other educational institutions;
- comprehensive programs which integrate communications, math, science, humanities, interpersonal skills, reasoning, and physical health and safety;
- opportunity to develop skills needed to enter and succeed in programs;
- continuing opportunities to extend and upgrade skills, knowledge, and interests;
- support for informed decisions using knowledge of abilities, interest, and values realized through testing, evaluation and counseling, as well as instruction;
- opportunities to develop personal, social, and cultural dimensions.

The College affirms that excellence in instruction at reasonable student cost is its highest priority. The College is accountable for its mission within the limitations of its physical and financial resourses.

College Goals

GOAL AREA: Vocational Technical Education

To offer programming which meets the vocational technical education needs of students, service area residents, and employers in traditional occupations and emerging career fields.

(continued on other side)

College Offices are open throughout the fall, winter and spring, except on official College holidays, from 8:00 a.m. to 4:30 p.m., Monday through Friday. During the summer, College Offices are open 7:30 a.m. until 4 p.m., Monday through Thursday and until 1 p.m. on Fridays.

Please send me an Application for Admission form to
THE WILLIAMSPORT AREA COMMUNITY COLLEGE

Name _____

Address _____ Tel. No. _____

City _____ State ____ Zip ____

High School _____ Year of Graduation _____

College(s) _____

I am interested in the _____ Curriculum

I would like further information about _____

Please send me an Application for Admission form to
THE WILLIAMSPORT AREA COMMUNITY COLLEGE

Name _____

Address _____ Tel. No. _____

City _____ State ____ Zip ____

High School _____ Year of Graduation _____

College(s) _____

I am interested in the _____ Curriculum

I would like further information about _____

GOAL AREA: General Education

To ensure that students acquire an introductory knowledge of communications and mathematics, and appropriate social sciences, natural sciences and humanities in order to facilitate their acquisition of the skills and knowledge that will enable them to live effectively in society and/or to prepare them for further study.

GOAL AREA: Developmental Education

To identify and assess the basic skill levels of all students and provide program opportunities to ensure that students develop appropriate reading, writing, and mathematics competencies to succeed in college-level studies.

GOAL AREA: Lifelong Education

To instill in students and service area residents an appreciation for learning as a lifelong activity, and to provide programming which meets their vocational, avocational, social, and cultural interests.

GOAL AREA: Counseling and Advising

To provide counseling services which permit the student to enjoy a smooth progression through the recruitment, admissions, career identification, and job placement processes and which employ effective academic advising and provide the opportunity for professional assistance in resolving personal difficulties.

GOAL AREA: Effective Management

To provide appropriate opportunities for all College constituencies to participate actively in institutional decision-making processes, in the accomplishment of institutional objectives and the achievement of College goals.

GOAL AREA: Accessibility and Student Services

To offer programs and services at affordable costs to students and at times and locations which optimize educational accessibility, and which meet the special needs of the College's student population.

GOAL AREA: Staff Development

To contribute to the quality of instruction and institutional operations by providing opportunities for College staff to develop professionally and to advance in their fields through the use of a staff development program based upon the needs of individual staff members.

GOAL AREA: Intellectual Orientation

To provide programming which emphasizes the process skills of inquiry, research, problem definition, problem solution, and which encourages students to embrace new ideas and ways of thinking.

GOAL AREA: Student Personal Development

To develop an atmosphere in which students are encouraged to identify personal goals and to develop the means for achieving them through fostering in the student a sense of self-worth, self-confidence, and self-direction.

GOAL AREA: College Community

To foster an atmosphere of the College as a community where lines of communication are open and candid and where a strong commitment to personal development and to the College's goals is maintained.

GOAL AREA: Instruction

To provide a program of instruction which maintains high standards of academic performance, which is innovative in the implemenation of alternative instructional delivery systems, and which actively seeks to provide the most modern equipment, facilities, and instructional support services for the educational process.

GOAL AREA: Resources

To develop the fiscal, human, and physical resources needed to support the College's programs and services.

GOAL AREA: Physical Plant

To develop and maintain physical facilities that provide an environment that is safe, healthful, and conducive to learning.

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 356 WILLIAMSPORT, PA
POSTAGE WILL BE PAID BY ADDRESSEE

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

Admissions Office
The Williamsport Area Community College
1005 West Third Street
Williamsport, Pennsylvania 17701-9981

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Campus Map

ATC — Automotive Trades Center
- Auto Body Repair
- Automotive Mechanics
- Automotive Technology
- Transportation Technology Office

DC — Diesel Center
- Diesel Mechanics
- Diesel Technology

TTC — Technical Trades Center
- Secondary Vocational Programs Office
- **TT1**
- Secondary Automotive
- **TT2 & TT3**
- Electrical Occupations
- Electrical Technology
- **TT4**
- Machine Tool Technology
- Machinist General

MTC — Metal Trades Center
- Welding
- Industrial Technology Office

GYM — Gymnasium
- Physical Education & Health
- Intramural Athletics & College Activities
- Student Health Services

LRC — Learning Resources Center*
- Advisement & Center Services Center
- Architectural Technology
- Bookstore
- Cooperative Education, Postsecondary
- Developmental Studies & Act 101
- Library
- Mathematics/English Laboratories
- Media Center
- Reading Laboratories

BTC — Building Trades Center
- Air Conditioning/Refrigeration
- Carpentry & Building Construction Technology
- Construction Technology
- Plumbing and Heating
- Construction Technology Office

LEC — Lifelong Education Center
- Broadcasting
- Dietetic Technician
- Engineering Drafting Technology
- Food & Hospitality Management
- Industrial Drafting
- Quantity Foods
- Recreation Center
- Science Laboratories
- Tool Design Technology
- Student Government Office
- Susquehanna Room (Food Service Area)
- WWAS - Radio
- President
- Associate Academic Dean
- Associate Dean, Educational Services
- College Information & Community Relations
- College Foundation
- Dean, Academic Affairs
- Dean, Administration
- Dean, Development
- Dean, Educational Research, Planning & Evaluation
- Dean, Employee & Community Relations
- Dean, Student Services
- Executive Assistant for Internal Affairs
- Personnel

ACC — Academic Center*
- Accounting
- Advertising Art
- Business Management
- Clerical Studies
- Computer Information Systems
- Dental Hygiene
- Electronics Technology
- English
- Graphic Arts
- Human Service
- Journalism
- Mathematical Computer Science
- Practical Nursing
- Printing
- Radiography
- Retail Management
- Secretarial Office Administration
- Surgical Technology
- Technical Illustration
- Word Processing
- Admissions
- Bursar
- Business & Computer Technologies Office
- Business & Financial Operations
- Career Options
- Center for Lifelong Education
- Computer Center
- Duplicating & Mail Services
- Financial Aid
- Health Sciences Office
- Integrated Studies Office
- SPOTLIGHT
- Staff and Program Development
- Student Records
- Veterans' Information

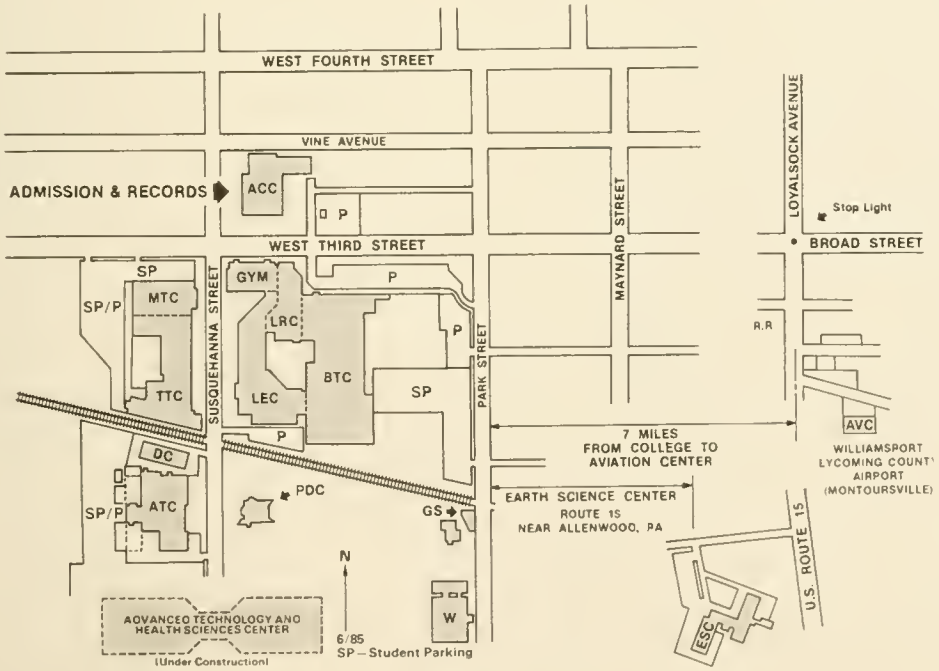
GS — General Services
- Dean, General Services
- Security

W — Warehouse

AVC — Aviation Center
- Aviation Maintenance Technology
- Aviation Technology

ESC — Earth Science Center
- Agribusiness
- Floriculture
- Forest Technology
- Nursery Management
- Outdoor Power Equipment
- Service & Operation of Heavy Construction Equipment
- Wood Products Technology
- Natural Resources Management Office

*Elevators provide access to the upper floors of these buildings. Access to the second floor of the Gymnasium and the Lifelong Education Center is through the second floor of the Learning Resources Center.



The Williamsport Area Community College
1005 West Third Street
Williamsport, PA 17701

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Williamsport, PA 17701

WILLIAMSPORT
AREA
COMMUNITY
COLLEGE

1005 West Third Street • Williamsport, PA 17701-5799

The Williamsport Area Community College does not discriminate on the basis of age, race, color, religion, creed, national origin, sex, handicap, veteran status or political affiliation in admissions and maintains non-discriminatory policies throughout its operations.